SOUTHERN TEXTILE EXPOSITION NUMBER

COTTON

Volume 83
Number Seven
$1.00 a Year.

MAY, 1919

Published monthly by
W. R. C. Smith Publishing Co.,
Dalton, and Atlanta, Ga.

Entered as second-class matter at the postoffice, Dalton, Ga., under Act of March 3, 1879.

REWIND
YOUR FILLING
IT PAYS

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PORCELAIN GUIDES

for

Textile Machinery

Mitchell-Bissell Co.

251-255 Fourth Avenue, New York

Send for
New Catalogue

AN IMPORTANT ADVANTAGE

-OF THE---

NORTHROP LOOM

TRADE MARK

with a materially shortened number of working hours per week, is its capacity to be operated during the noon hour and a corresponding time night or morning without any weavers at all

Looms under such conditions violate no labor laws, but do increase the amount of cloth 15 to 25 per cent. per loom compared with what can be done by common looms on the same goods running mill hours only

The shorter the working day the greater the proportional advantage of the Northrop loom in this respect

You can neither afford to operate common looms in competition with Northrop Looms, nor to experiment with makeshifts

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

Southern Office
188 South Forsyth Street Atlanta Georgia

Copyright 1917 by Draper Corporation

WALK into a mill that has been dressed with a coat of Dixielite and you wonder where it gets the radiation. You see it everywhere, even on the faces and in the sparkling eyes of those who work within.

Dixielite illuminates the mill interior, just as it radiates good cheer. The effect is noticeable at the end of the day. You see it in the records of production.

And, Dixielite, mind you, is not an expense, but an investment, which pays bigger dividends than anything you can put the same amount of money in.

Dixielite is white—enamel white, and age does not tend to make it yellow. Neither will it crack or peel.

When you begin repainting, just remember to insist on Dixielite. Only one coating is required for surfaces previously painted.

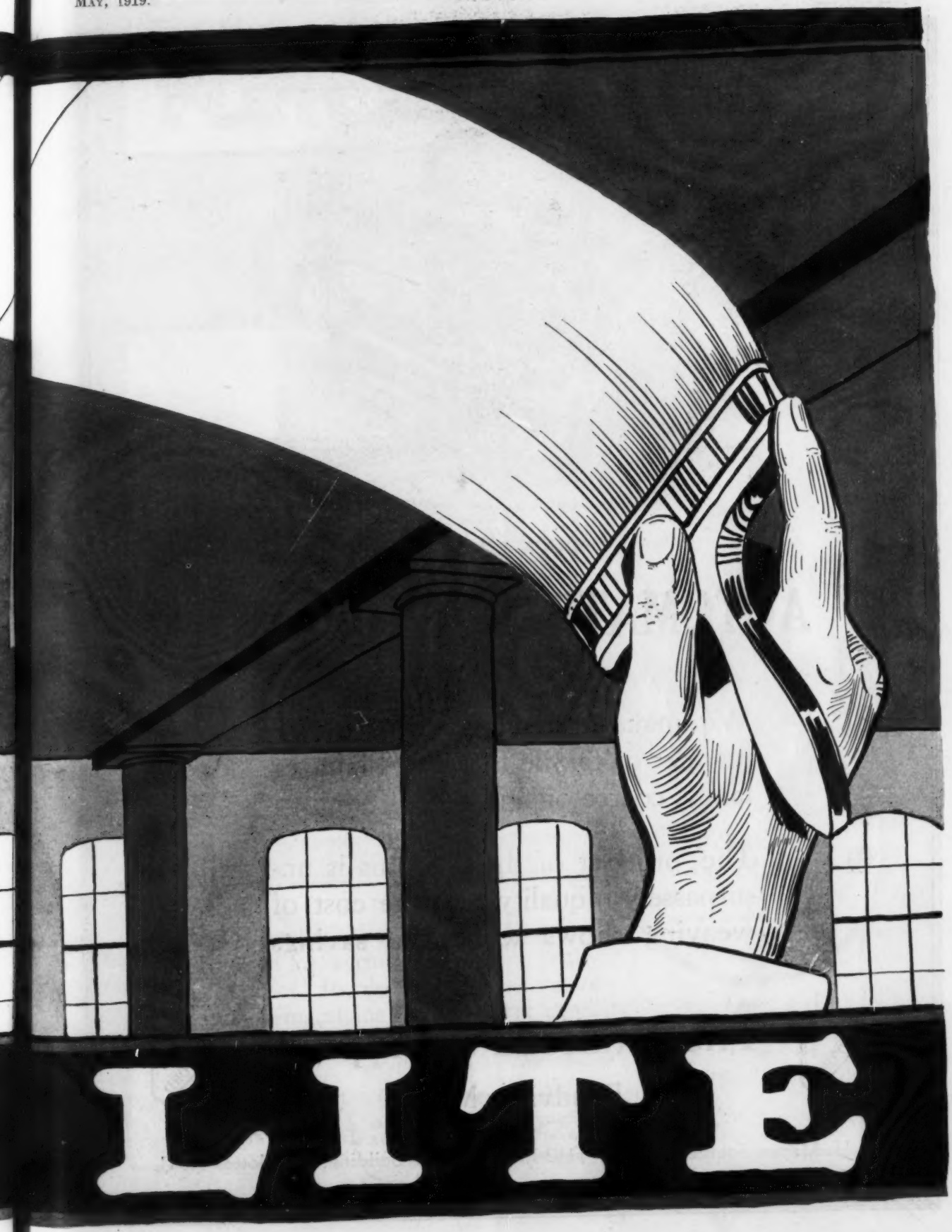
For brick or cement walls, first apply Bay State Brick and Cement Coating. Then add one coat of Dixielite.

Send for a sample panel of Dixielite.
Write today.

Dixielite comes in Gloss, Semi-Gloss and Flat.

Wadsworth-Howland & Co., Inc.
139-141 Federal Street,
Boston, Mass.

DIXIE


LITE

DUCK LOOM

AUTOMATIC DUCK LOOMS

We make automatic looms for all manner of textile fabrics. Plain or fancy, coarse or fine.

The product of these looms is unsurpassed in quality and the cost of weaving shows wonderful savings

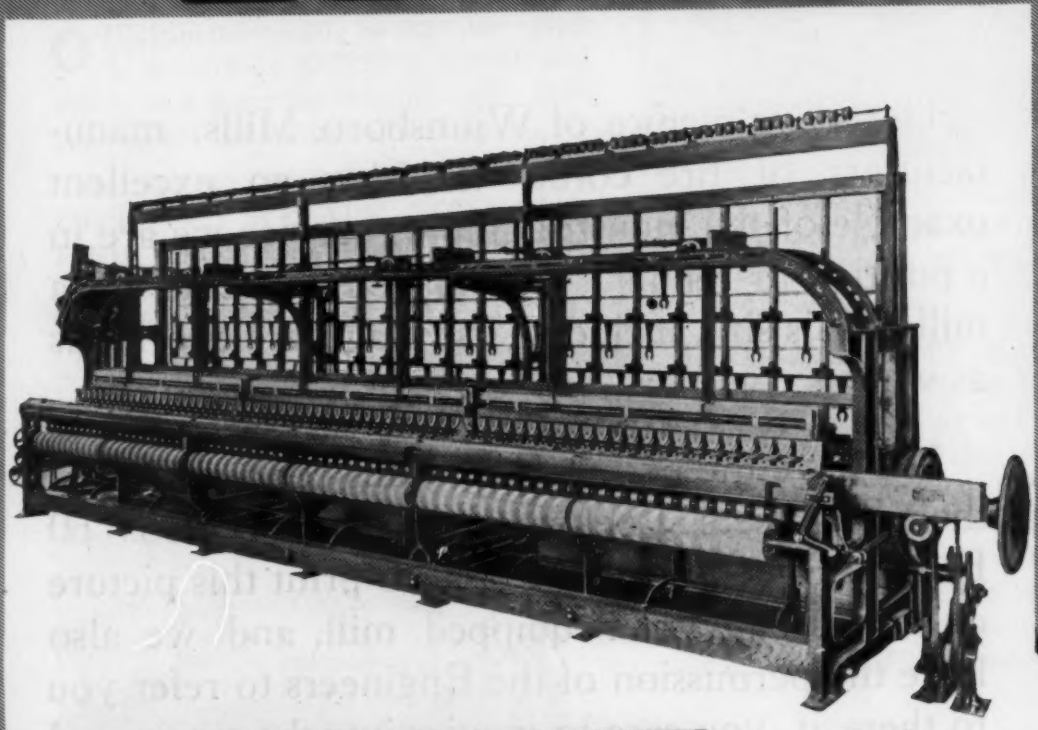
The Stafford Company

Readville, Mass.

J. H. Mayes, Southern Agent, 1112 Independence Building, Charlotte, N. C.

FLETCHER WORKS

LOOMS



3-Section Tape Loom
showing complete loom with circular shuttle Batten

This Fletcher Works Tape Loom is easily cared for, accessible and practically trouble proof. Its mechanical motions are simple. It maintains mill output at capacity limit. One girl runs two looms.

Write for full particulars today.

FLETCHER WORKS
(FORMERLY SCHAUM & UHLINGER)
Glenwood Avenue and Second St., Philadelphia, U. S. A.

Winnsboro Mills, Winnsboro, S. C.—Lockwood, Greene & Co., Managers and Engineers.

The above picture of Winnsboro Mills, manufacturers of tire cords, furnishes an excellent example of the industrial piping service we are in a position to render. Piping requirements of a mill of this size, including its village, are enormous as well as complex.

We have the permission of this concern and of their Engineers, Lockwood, Greene & Co., 60 Federal Street, Boston, Mass., to print this picture of an unusually well-equipped mill, and we also have the permission of the Engineers to refer you to them if you care to inquire into the nature and satisfaction of our work.

Parks-Cramer Company

Successor to

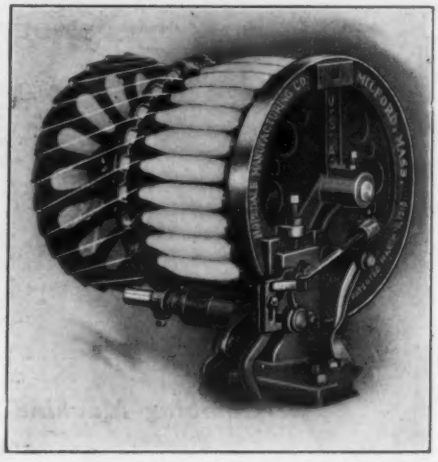
The G. M. Parks Company FITCHBURG, MASS.

CHARLOTTE, N. C.

Stuart W. Cramer BOSTON, MASS.

Better Looms--More Production

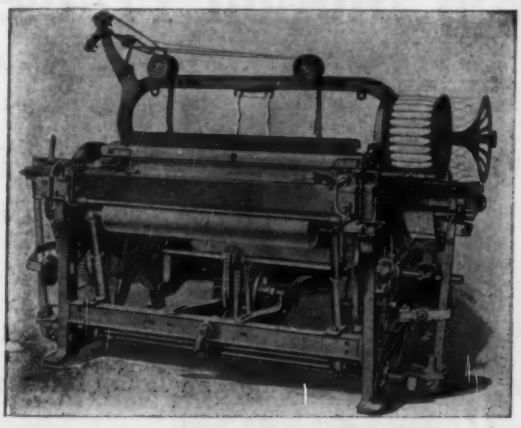
Automatic Looms Reduce the Cost of Weaving--We Reduce the Cost of Automatic Looms.



OUR aim in building an automatic loom is to make a BETTER LOOM, and sell it at a more satisfactory price than the market has afforded in the past.

Our object is NOT TO COPY BUT TO IMPROVE. WE ARE NOT SATISFIED WITH THE RESULTS OBTAINED FROM EXISTING LOOMS, AND OUR WORK IS BASED UPON OUR DETERMINATION TO MAKE BETTER LOOMS OR NONE AT ALL.

That we have been able to improve EVERY ATTACHMENT WE HAVE TAKEN UP so far is due in large degree to the ability of our Mr. Jonas Northrop in collaboration with our Mr. Clare H. Draper, who by training and experience is especially fitted to guide the development and growth of this Company. Mr. Northrop, without doubt, is the ablest expert on automatic looms in the country today. For evidence of this fact, we cite the large number of patents in his name covering mechanisms actually in use.



See Our Exhibit at the Greenville Exposition

Spaces No. 146 to 155

MANUFACTURED BY

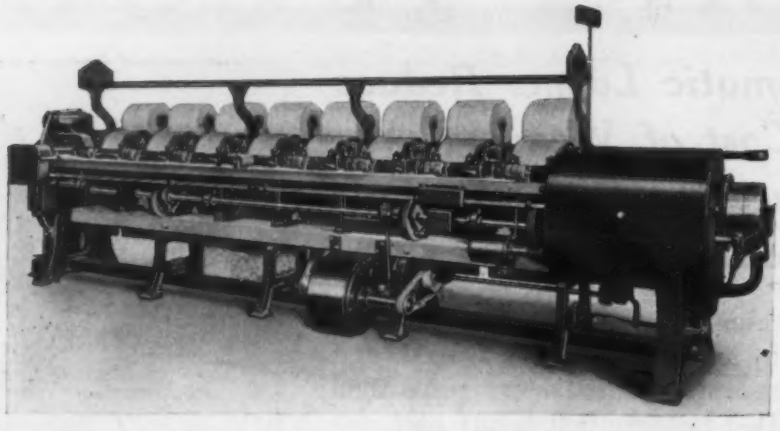
HOPEDALE MANUFACTURING COMPANY

Works at MILFORD, MASS. **Southern Agent, EDWIN HOWARD, Greenville, S. C.**

WHITIN MACHINE WORKS

ESTABLISHED 1831

TEXTILE MACHINERY



Combing Machine Equipped With Waste Condenser

"Made in U. S. A."

MAIN OFFICE AND WORKS

WHITINSVILLE, MASS., U.S.A.

SOUTHERN OFFICE CHARLOTTE N.C.

Thacker Warp Stop Motion Frame

Attachment used whereby open drop wires can be drawn in at frame and transferred to loom as readily and safely as are the closed drop wires

We Offer to the Trade a New Bobbin Stripper for Automatic Loom Bobbin.

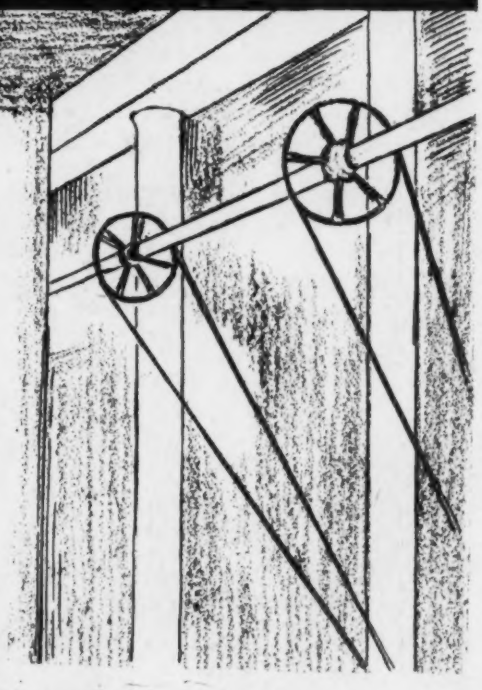
Crompton & Knowles Loom Works

Worchester, Mass.

Providence, R. I. **Philadelphia, Pa.** **Paterson, N. J.**

Southern Representatives---Alexander & Garsed, Charlotte, N. C.

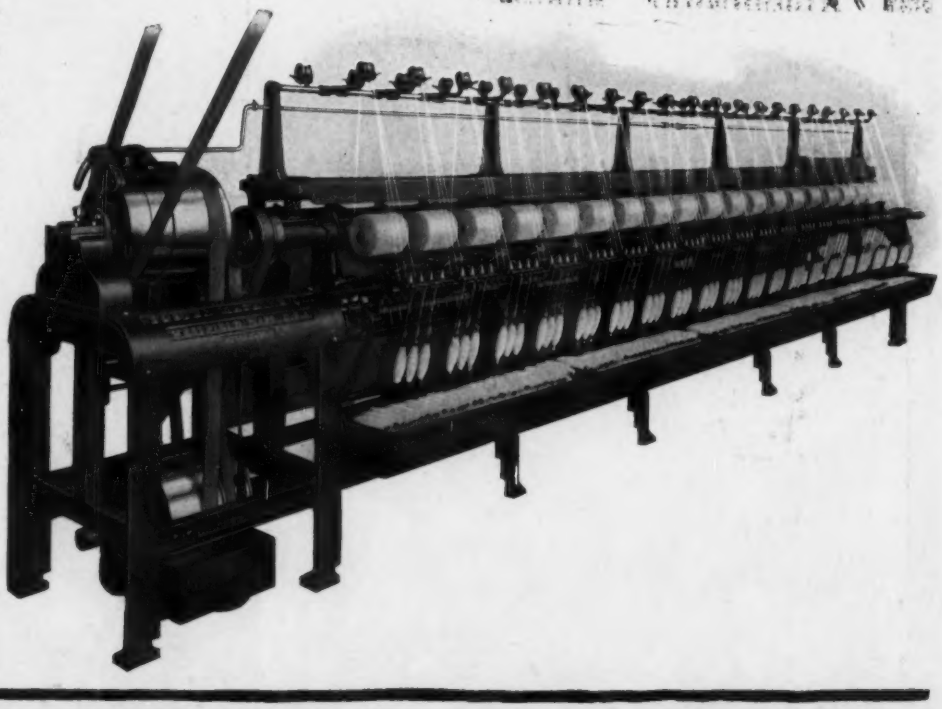
FOSTER PRODUCTS



THE FOSTER MODEL 25 DOUBLER

A carefully calculated Doubling Machine, designed for the exact parallelling of yarn for twisting.

Foster Doubling before twisting eliminates slack ends, cork screw twist and all defects in the twisted thread caused by unequal tension.



FOSTER MACHINE COMPANY

WESTFIELD, MASS.

John Hill, Southern Representative, Healy Building, Atlanta, Ga.

Reduce Your Ash Handling Costs, too

THE ever present ash disposal problem has been solved in a number of the more progressive textile mills. The use of the American Steam Ash Conveyor now insures the handling of ashes quickly, efficiently and economically.

Sound ash disposal engineering has been the basis of our success. The individuality of each boiler plant is met by a wise selection from our extensive line of conveyor fittings. Being the oldest concern in the steam conveyor field our patents are basic and cannot be duplicated. They have been developed and refined to their present high point of efficiency.

If you are using ash wheelers, if your ash handling expenses seem high, you will want to thoughtfully investigate to see if you too, can secure the savings effected by other textile mills.

We will be glad to serve you. Without obligation, one of our ash disposal engineers will inspect your plant and make his recommendations. Full information is contained in our new book, "Modern Methods of Ash Disposal." Address Department K for your copy.

Fifty tons of ashes are daily discharged into this huge ash bin, at the textile plant of Forstman & Huffman, Garfield, N. J.

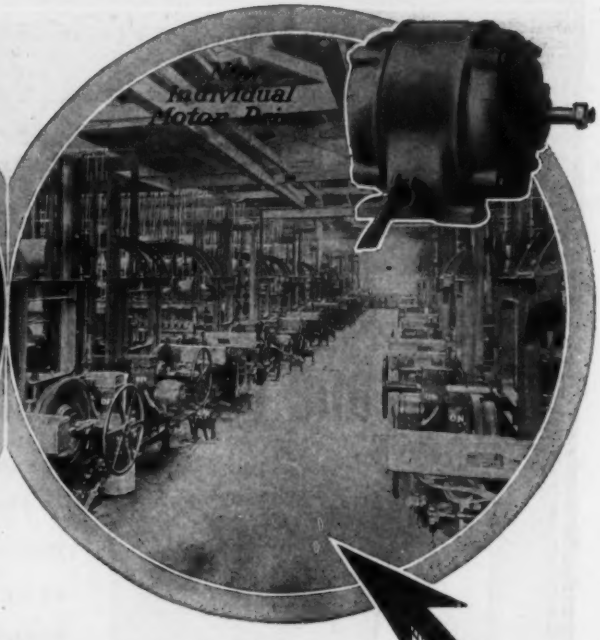
American Steam Conveyor Corporation

Ash Disposal Engineers.

Chicago, 326 West Madison Street
New York 110 West 40th Street

AMERICAN STEAM CONVEYORS

COPYRIGHT 1918, BY AMERICAN STEAM CONVEYOR CORPORATION



John Sidebotham, Inc., of Philadelphia, Pa., has made the complete change to

INDIVIDUAL MOTOR DRIVE

All line-shafting, hangers and belts have been removed, ADDITIONAL MACHINES INSTALLED, and all more compactly and more conveniently arranged. Westinghouse Textile Motors were installed on all machines.

A 24% Reduction in the Annual Power Bill with a 19% Increase in Production

Here are the figures:—

	Engine	Individual Motor-drive	Saving Effected	Production Increased
Annual Power Bill.....	$7127.	$5395.	$1732	
Annual production per loom.	4160 lbs.	4940 lbs.		780 lbs.

Net cost of the electric installation, $15181.

Westinghouse Textile Engineers are prepared to give you the benefit of a broad experience in the solution of your power and production problems.

Westinghouse Electric & Manufacturing Co.,
East Pittsburgh, Pa.

FROM MECHANICAL-TO INDIVIDUAL-MOTOR-DRIVE

W
WESTINGHOUSE ELECTRIC

Westinghouse

You are NOT Using
Lane Canvas Baskets and Trucks?

FIG. 20.

Then it must be you have never stopped long enough to ask yourself why.

FIG. 27.

Consider for a moment their advantages as applicable to your various departments.

In the first place, their long wear removes them from the First-Cost Class and places them on a Cost-Per-Year basis. Then you come to the light weight and easy handling qualities. The help appreciates this, and also the absence of nails and splinters which tear hands and clothing. Their perfectly smooth interior reduces waste, too, especially in the fine goods mill.

All Lane Trucks are equipped with our improved casters with guards which prevent waste yarn, etc., from clogging. This saves the trucks, the floors and the help.

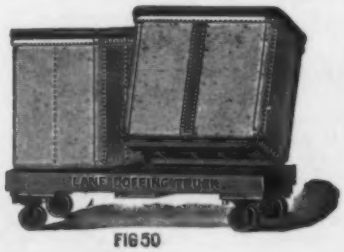


FIG 50

Write for Catalog No. 65

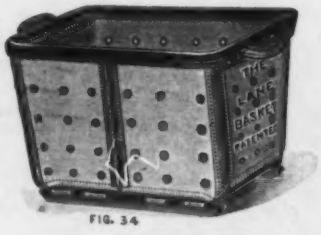


FIG. 34

W. T. Lane & Brother, Mfrs.

Poughkeepsie, N. Y.

American Warp-Drawing Machine Co.

AUTOMATIC MACHINERY FOR WARP PREPARATION

—GIVES—

Material Savings in the Dressing Room.
Material Savings in the Weave Room—due to improved conditions of warp, harness and reed in the loom.

Drawing-in Machines.

For drawing all twine harness work—with or without drop wires—and all Draper-Northrop harness work.
Draw drop-wires, harnesses and reed at a single operation—insuring perfectly "straight" warps.
Twine harnesses—eight or less.
Drop wires—four banks or less.
Draper-Northrop steel harness—six or less.
Warps—one or two beams—unleased warps. Single leased-warp.

Lease-Picking Machines.

To give an accurate lease for drawing difficult "Dobby" work, or for twisting-in.
One or two beams drawn, by pattern, into an accurate single lease.
One or two separate leases—with a single-thread or double-thread lease.

Combined Drawing-in and Lease-Picking Machines.

To give accurate drop wire drawing-in, and an accurate lease, for drawing-in by hand complicated "Dobby" weaves.
One or two beams drawn, by pattern, into a single, accurate lease—and simultaneous drawing-in of four or less banks of drop wires.

Reed Cleaning Machines.

A valuable addition to the dressing room equipment.
Keeps the reeds clean, smooth and bright—and thus gives a marked improvement in weaving conditions. Largely eliminates trouble with "soft" warps—which cause excessive breakage in the loom through dirty and rough reeds.
A number of mills have found that this machine shortly pays for itself—both by saving reeds and by improving weaving conditions. It is entirely automatic—and affords means for quickly and periodically cleaning, smoothing-up and polishing the reeds. It prevents throwing away many a reed.

American Warp-Drawing Machine Company

195 FREEPORT STREET **BOSTON, MASSACHUSETTS**

SOUTHERN OFFICE: 517 HURT BUILDING, ATLANTA, GEORGIA.

ROY GRINDERS

FOR MORE THAN FIFTY YEARS

–we have concentrated on the building of Roy Grinding Machines for textile mills exclusively, and have striven with each passing year for added efficiency, capacity and durability.

Naturally, if better machines could be devised, we would build them.

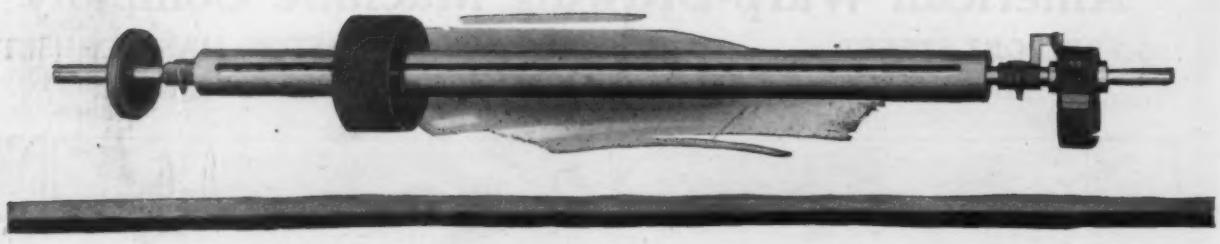
The Roy line includes Grinders for cotton and woolen cards, nappers, garnets, shears and calender rolls.

Descriptive bulletins will be mailed on request.

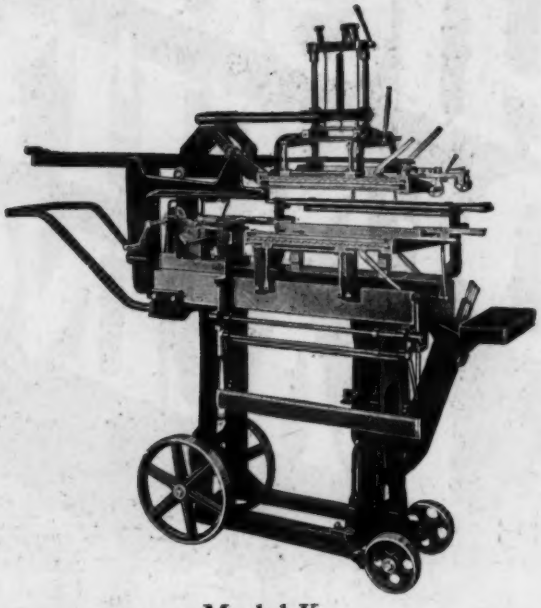
B. S. Roy & Son Co.

Established 1868

Worcester, Mass.



WARP TYING MACHINES



Model K

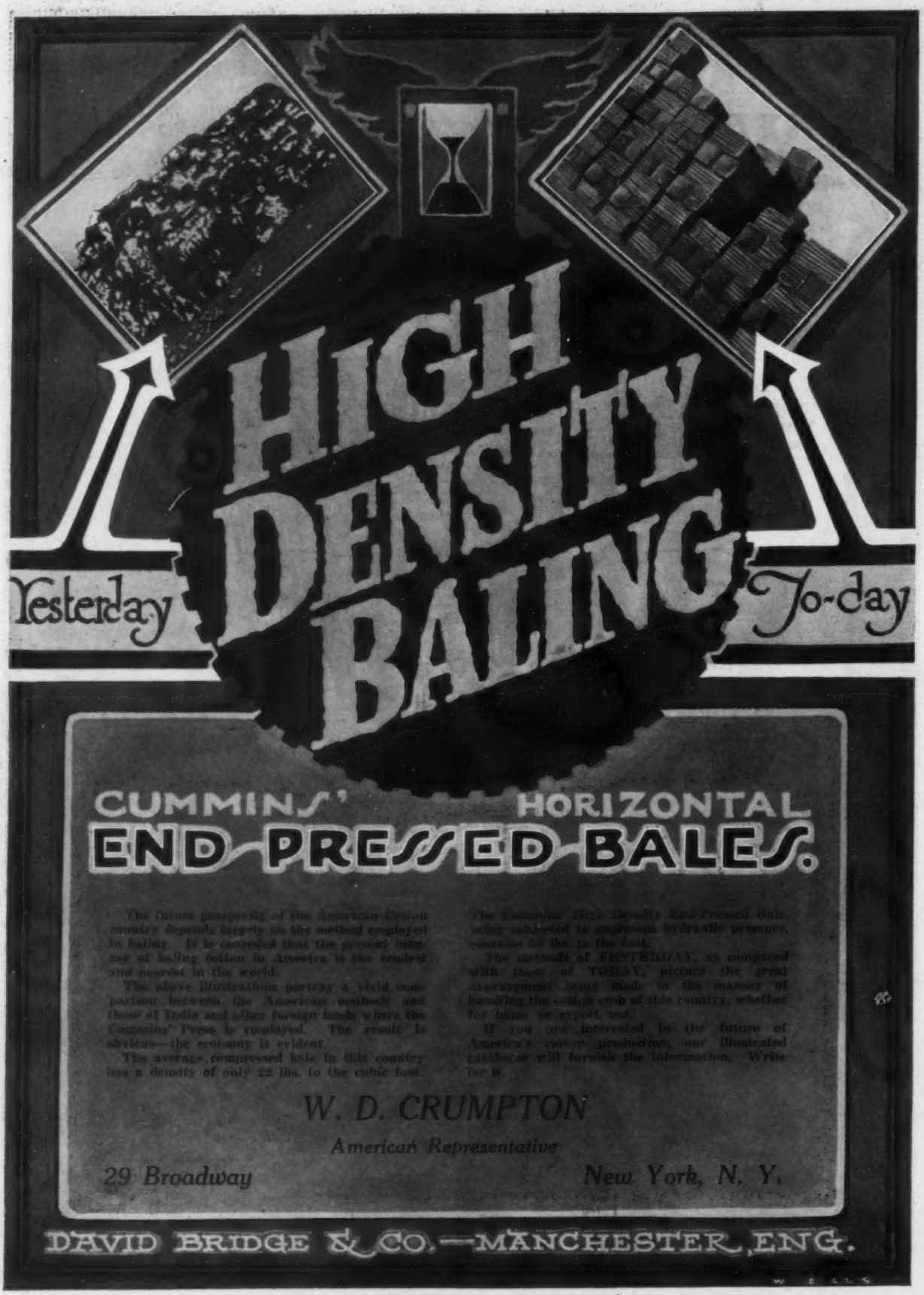
Also Models E and G Built in Various Sizes

Produce the Best Warps at Lowest Cost

Barber-Colman Company

GREENVILLE, S. C.
BOSTON, MASS.

Main Office and Factory, *ROCKFORD, ILL.*


Yesterday
HIGH DENSITY BALING
To-day
CUMMINS' HORIZONTAL
END PRESSED BALES.
The future prosperity of the American Cotton country depends largely on the method employed in baling. It is conceded that the present manner of baling cotton in America is the crudest and poorest in the world.
The above illustrations portray a vivid comparison between the American methods and those of India and other foreign lands where the Cummins' Press is employed. The result is obvious—the economy is evident.
The average compressed bale in this country has a density of only 22 lbs. to the cubic foot.
The Cummins' High Density End-Pressed Bale, being subjected to enormous hydraulic pressure, contains 50 lbs. to the foot.
The methods of YESTERDAY, as compared with those of TODAY, picture the great improvement being made in the manner of handling the cotton crop of this country, whether for home or export use.
If you are interested in the future of America's cotton production, our illustrated catalogue will furnish the information. Write for it.
W. D. CRUMPTON
American Representative
29 Broadway
New York, N. Y.
DAVID BRIDGE & CO.—MANCHESTER, ENG.

Solving the Marking Problem

THOSE marking problems that present themselves every day - there's one BEST WAY of handling them—and that's by means of our

Improved No. 8 National Power Marking Machine or Model H-3 Marking Machine

These modern devices are highly efficient because speedy, neat, clean-cut. They mark **indelibly**—once marked is permanently marked. Can be operated successfully by "green" employees.

Cotton Mills and Finishing Plants use the machines for marking the finished goods with the brand name and trade mark.

Mill Village Laundries use them for marking linen.

Dyeing, Bleaching and Finishing Plants use them for marking goods with seller's brand and trade mark.

Knit Goods Plants use the machines for marking the lot, stock and size numbers on finished garments - such as underwear and hosiery.

Improved No. 8 National Power Marking Machine. Operates like a typewriter.

National "Special" Inks absolutely the best that can be made. Indelible, easy-flowing, non-smearing, and make a clean-cut mark. The best for ALL MARKING PURPOSES.

The machines are used also for marking nurses' uniforms and surgeons' apparel in first-aid hospitals; for marking linen supplies of factory restaurants; for marking the linen of the welfare department. In short, our machines handle all marking problems quickly and satisfactorily—especially when used with National "Special" Inks.

Model H-3 Marking Machine. Marks by means of a die.

Write For Copy of "BETTER MARKING"

it will help you solve your marking problems, besides furnishing you a fund of valuable information generally.

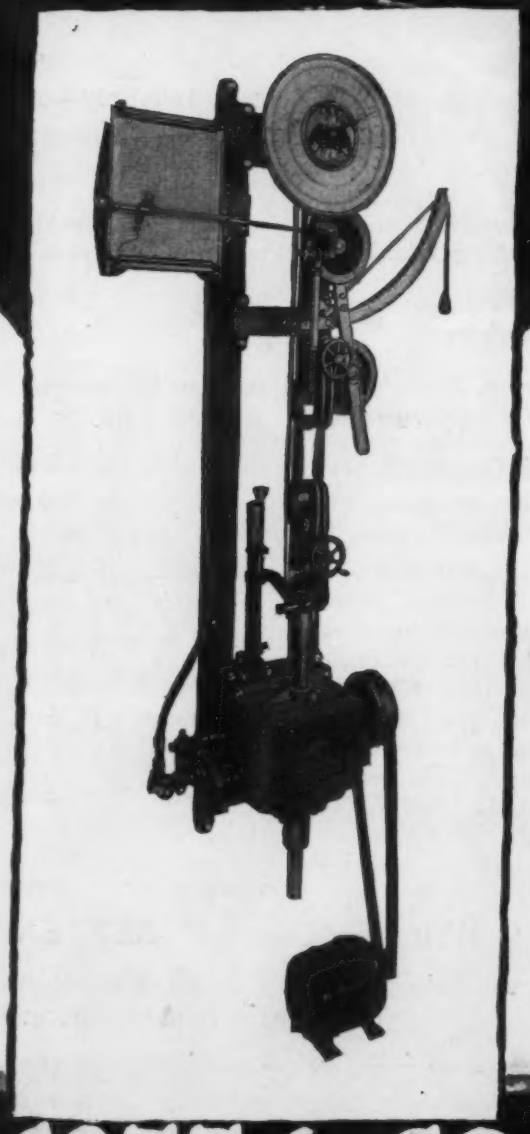
The National Marking Machine Co.

1068 Gilbert Ave. (General Office) Cincinnati, Ohio

NEW YORK OFFICE: 40-44 West Fourth St., New York City

SCOTT TESTERS

For Testing and Recording Tensile Strength, Elasticity and Adhesiveness of all Materials.



IF proof of accuracy and uniformity of results and service is desired, we refer you to more than twenty departments of the U. S. Government who use and endorse them.

Scott's Combination Automatic Power Yarn and Cloth Tester, as here illustrated, provides for the testing of yarn as well as cloth and fabrics and is the only dependable type ever devised that will test all yarns from the most delicate to the heaviest, and convertible to the testing of all cloth and fabrics of every weight and weave up to 300-lbs. capacity.

Simplicity of construction, freedom from repairs, accuracy, uniformity of results and service never before known on this class of apparatus have made the Scott Testing Machines popular all over the world.

Scott Testers are made in both horizontal and vertical types and of various capacities. Write for illustrated literature which supplies all the details.

HENRY L. SCOTT & CO.
PROVIDENCE, R.I. U.S.A.

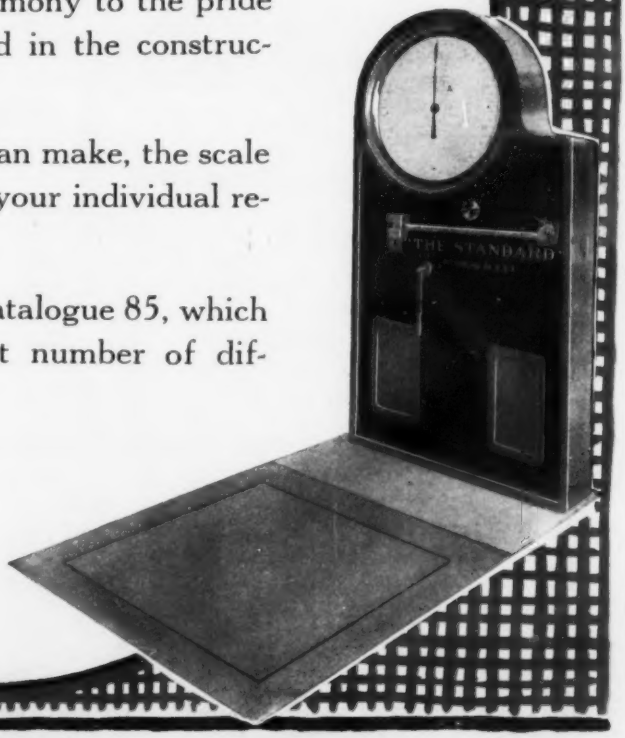
"THE STANDARD" SCALES ARE ACCURATE

THERE are special scales built to solve the weighing problems of textile mills, where absolute accuracy, speed and ease of handling the material are concurrent considerations.

"The Standard" Scales last for years, their dependability never lessening, their constant accurate service mute testimony to the pride and skill involved in the construction.

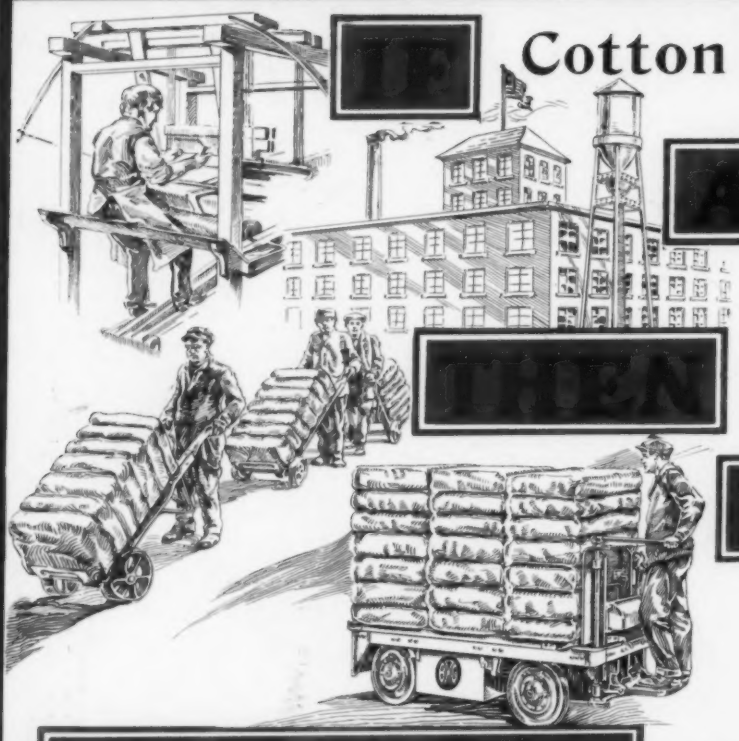
We have, or can make, the scale that will best fill your individual requirements.

Write for our catalogue 85, which illustrates a great number of different styles.



THE STANDARD SCALE & SUPPLY CO.

PITTSBURGH, 1631 Liberty Ave.
NEW YORK, 145 Chambers St.
PHILADELPHIA, 523 Arch St.
CHICAGO, 163-171 N. May St.
CLEVELAND, 1547 Columbus Rd.
BALTIMORE, 409 N. Gay St.



IF Cotton Cloth Was Still

AND MODERN Speed—

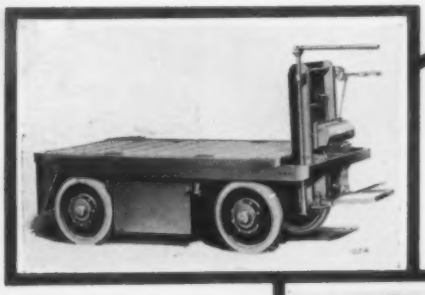
THEN Hand Trucks Would Be Satisfactory—

BUT Competition Today Means Where Cheapest

WHY NOT FACE THE POSSIBILITIES OF

INVESTIGATE

The BAKER *of* INDUSTRIAL



ELECTRIC STORAGE BATTERY

A Type for Every Haulage Need of the Textile Mill

THE SIGN OF PROGRESS
BRC
THE BAKER R&L COMPANY

Write for Descriptive Literature

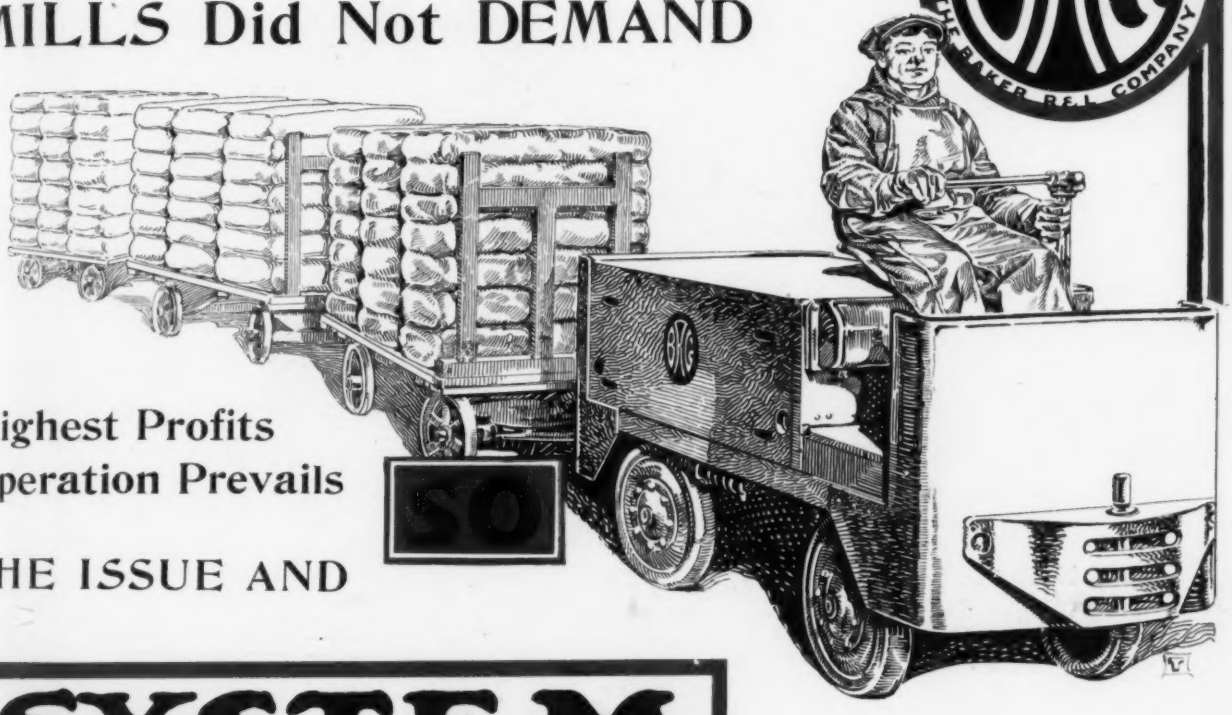
Manufactured by THE BAKER R & L

Also Makers of Raulang Electrics

Woven on a Hand Loom

MILLS Did Not DEMAND

THE SIGN OF PROGRESS
BKC
THE BAKER R&L COMPANY



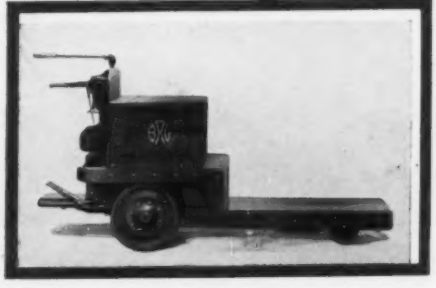
Highest Profits
Operation Prevails

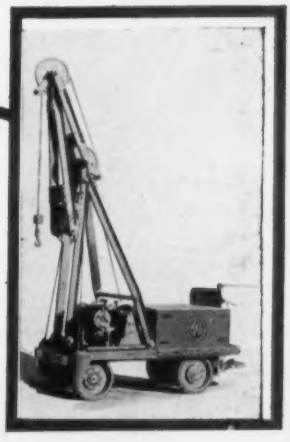
THE ISSUE AND

SYSTEM
TRANSPORTATION

DRIVEN TRUCKS *and* TRACTORS

No Tracks—No Change of Mill Layout Necessary





Opportunities
for Territorial
Representation
Now Open

or Representative Will Call

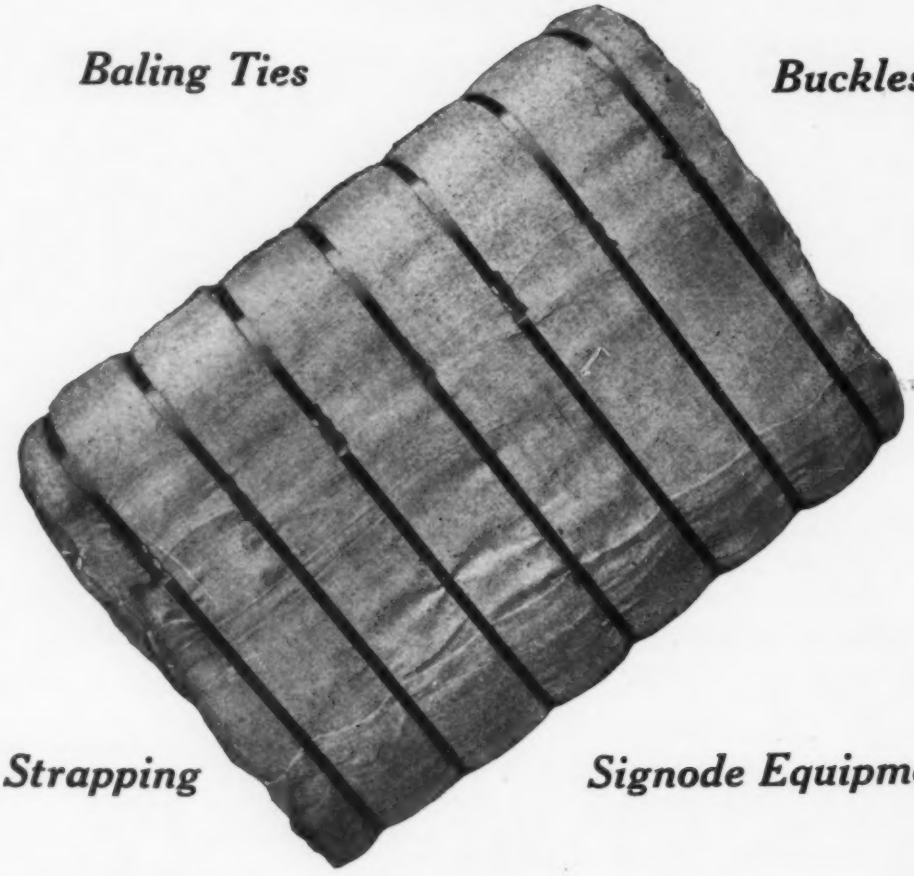
COMPANY, Cleveland, Ohio

and Owen Magnetic Gasoline Cars

THE SIGNODE SYSTEM, INC.

FOR BANDING BALES AND BOXES

Baling Ties *Buckles*



Box Strapping *Signode Equipment*

¶ In order to give Southern Textile Mills the service the immense volume of business deserves, we have established a Southern office and warehouse and are pleased to announce the appointment of Alvin Lovingood, Atlanta, Ga., Southern Manager.

¶ Service is the keynote of this organization and in compliance with your wishes we can now furnish baling ties, baling buckles, various styles of commercial box strapping together with a complete line of shipping room supplies.

SIGNODE SYSTEM, Inc.

WAREHOUSE AND OFFICE

ALVIN LOVINGOOD, Southern Manager

40 Gordon Place, Atlanta, Ga.

Factory: 129 So. Clinton St., Chicago, Ill.

33 Union Square West, New York City | **1001 Chestnut St., Philadelphia, Pa.** | **44 Federal St., Boston, Mass.** | **310 Clay St., San Francisco, Cal.**

Hospital Equipment *for* Southern Mills

It's Not Merely a Welfare Proposition

But a Paying Investment

The necessity for complete hospital equipment in all textile plants is being more and more appreciated by far-sighted mill executives. So many instances have been noted where emergency equipment could have saved the time-loss of injured or sick employees, or would have even been the means of saving lives.

Therefore, complete and up-to-date hospital equipment is no longer considered merely a philanthropic proposition, but an investment that pays dividends—a necessity to the big textile mill family.

Thomas Hospital Equipment is probably the most complete and substantially constructed equipment that can be purchased—the most economical to buy because it's extremely efficient and it's made to last.

Complete illustrated literature will be gladly sent upon request. Why not secure full information today.

F. H. THOMAS CO.

BOSTON, MASS.

Speed Up Production

The Factory at Your Fingers' Tips

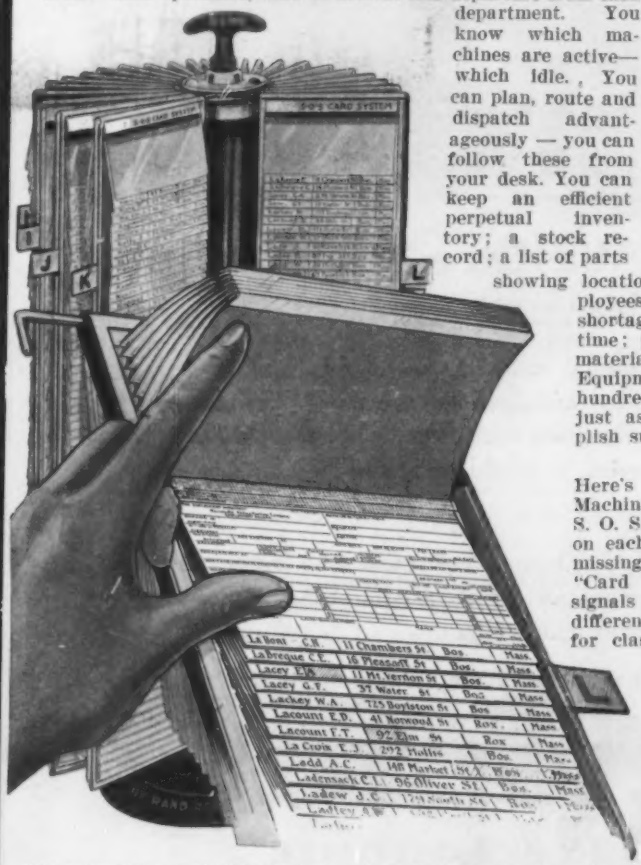
IT'S difficult these days to make good promised deliveries with present shortage of man power and shipping congestion—but you can stimulate production by keeping records efficiently. You can master many conditions peculiar to today if your records tell instantly the condition of any order at any time.

Handling Production Records on a RAND low-inclined desk stand.

RAND

Visible Record Equipment

does this. Occupies little space—visualizes your factory orders, and flashes before your eye the condition of every order—each operation, time of arrival and departure from each department. You know which machines are active—which idle. You can plan, route and dispatch advantageously — you can follow these from your desk. You can keep an efficient perpetual inventory; a stock record; a list of parts showing location in stock room; employees' records; take off shortage reports in minimum time; prevent over-buying of material. These things RAND Equipment is doing today in hundreds of businesses and just as easily it can accomplish such results for you.



Here's a RAND Card Record Machine carrying a RAND S. O. S. Panel—the vital data on each card, in plain view; missing card signalled by "Card Out." Trasparent signals in seven distinctly different colors may be used for classifying your records, thus greatly increasing their efficiency. Record information or refer to your records without handling or removing card. Simply lift card and the information is before you.

This is how the Burroughs Adding Machine Co. handles its employees' records

RAND

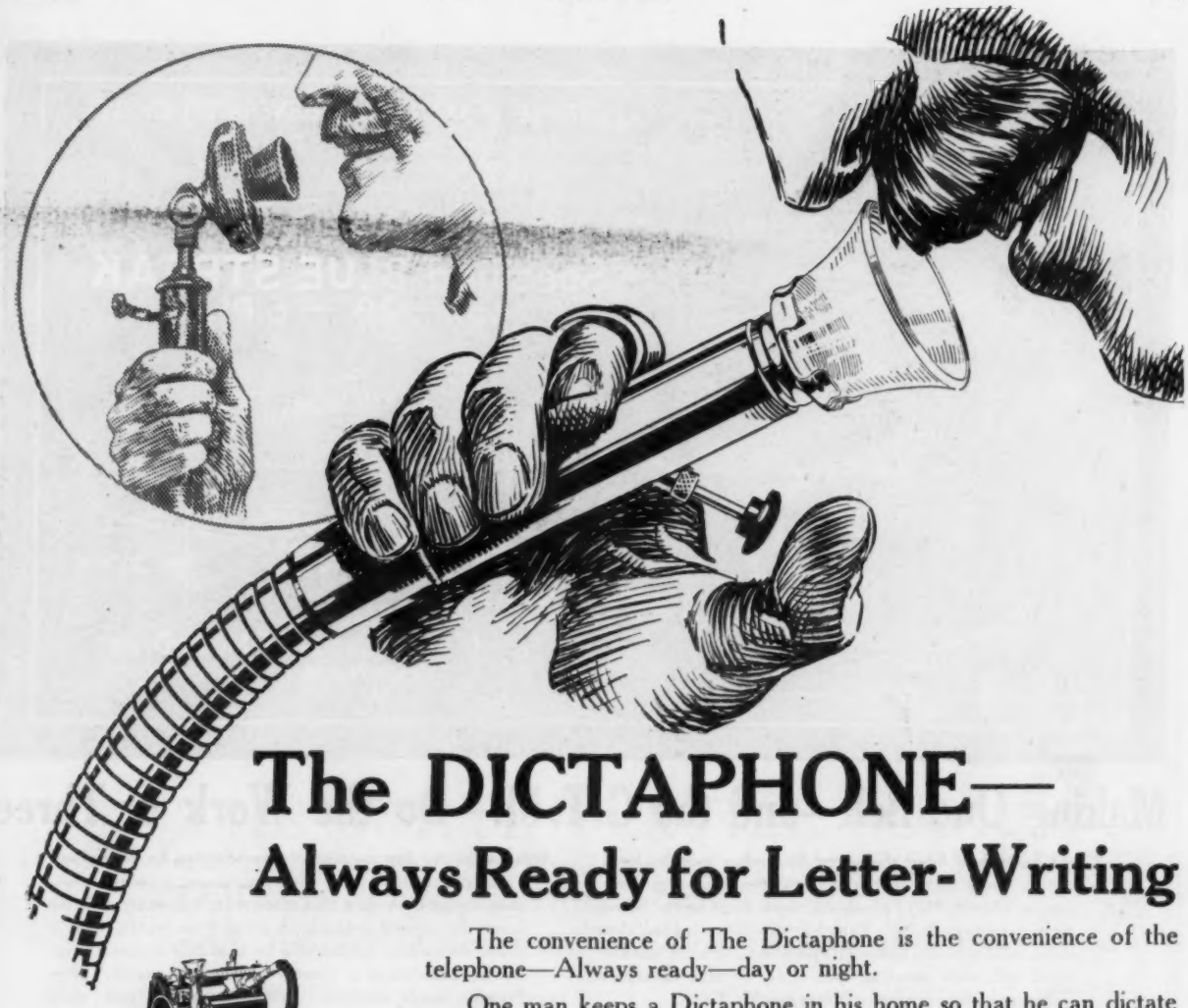
Visible Record Equipment is Indispensable, too, n Credit, Sales, Purchasing and Accounting Departments

RAND users now represent every line—and all continue buying more and more equipment. If you want to hasten production and insure future orders by making good now on promised deliveries, you need a RAND—need it badly. Write on your business letterhead for interesting information on production records now handled with RAND Equipment.

THE RAND COMPANY

2001 RAND Building **North Tonawanda, N. Y.**

Originators and Patentees of Visible Indexing



The DICTAPHONE—
Always Ready for Letter-Writing

The convenience of The Dictaphone is the convenience of the telephone—Always ready—day or night.

One man keeps a Dictaphone in his home so that he can dictate at night the notes, instruction-memos, etc., that were sidetracked during regular hours.

Another—on the eve of an extended business trip—dictates a mass of letters, final instructions and suggestions while waiting for the midnight train.

But to the average business man, The Dictaphone means free nights and Sundays, because its time-saving convenience generally clears his desk before closing time.

15-Minute Demonstration

On request, The Dictaphone man will call with his machine, and give a convincing 15-Minute Demonstration of The Dictaphone in *your* office, on *your* work.

THE DICTAPHONE

Registered in the U. S. and Foreign Countries

Dept. 137-E, Woolworth Building, New York City

Branch Offices are located in the following Southern cities

Tampa	**Columbus**	**Atlanta**	**Charlotte**	**Nashville**
Jacksonville	**Brunswick**	**Savannah**	**Burlington**	**Knoxville**
Montgomery	**Valdosta**	**Charleston**	**Wilmington**	**Memphis**

There is but one Dictaphone, trade-marked "The Dictaphone," made and merchandised by the Columbia Graphophone Company.

"The Shortest Route to the Mail-Chute"

Making One Belt—and the G.T.M.—Do the Work of Three

Three belts had been devoured in twelve months by a certain motor drive in the Warren Manufacturing Company's Warren, N. J., plant. All were large belts. Some were expensive belts. Together the three loaded that drive with a pretty figure of operating costs. While the third belt was petering out, a G. T. M.—Goodyear Technical Man—called. It was our Mr. Ford.

They looked at his card, asked him in, listened a while, and asked the price of a belt for that motor drive. The G. T. M. didn't even take time to ask the width of the belt—he just said that he didn't know the price. Before they could ask him what kind of salesman he was, he told them about the Goodyear plan of selling belts—of thoroughly studying conditions and then prescribing the belt that would meet those conditions most efficiently and economically. They thought of three belts of the past twelve months and reasoned that they had nothing to lose By trying the plan.

He studied that drive. It was a hard one. The speed was close to a mile a minute—and when the motor was not used as an auxiliary for driving seven beaters, it was reversed and used as a generator. The centers were short. There were a number of other peculiar conditions—but after the G. T. M. got through studying them he knew just what to do—he had seen some drives very like it and had tried out his prescription.

After allowing for special circumstances he prescribed a belt of only six plies—although many a power engineer would have said that more were necessary. But he knew the proved strength of every Blue Streak ply—a brute strength as remarkable as its pulley hugging grip. So he prescribed a twenty-eight inch six-ply Blue Streak—made endless. Although he had had great success with special fasteners of various types to fit certain conditions, he knew that the best of fasteners were hopeless here—so it was a Blue Streak made endless.

That belt was applied in November, 1916. Its cost was less than that of one of the three belts that had been so disappointing, and yet that Blue Streak lasted longer than the three together. That synchronous drive doesn't pile up any more undue costs for the seven beaters it serves, doesn't cause interruptions nor lowered efficiency any more.

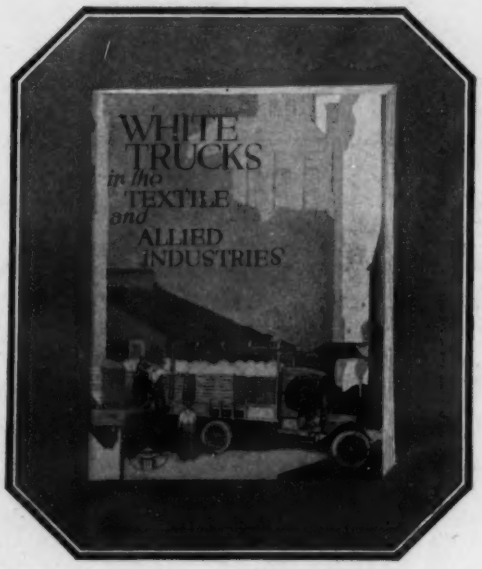
If you have a belt-devouring drive that is eating too many dollars, ask a G. T. M. to call. He'll do it without charge when he is in your vicinity. There are many of them—all trained in the Goodyear Technical School—all with experience in plants similar to yours—all selling belts to meet conditions and not as a hardware store sells nails. The G. T. M.'s services are free simply because the savings they effect for purchasers are so considerable that a gratifying volume of business from the plants served is certain to come to us within a few years.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO

BELTING · PACKING · HOSE · VALVES

GOODYEAR

AKRON



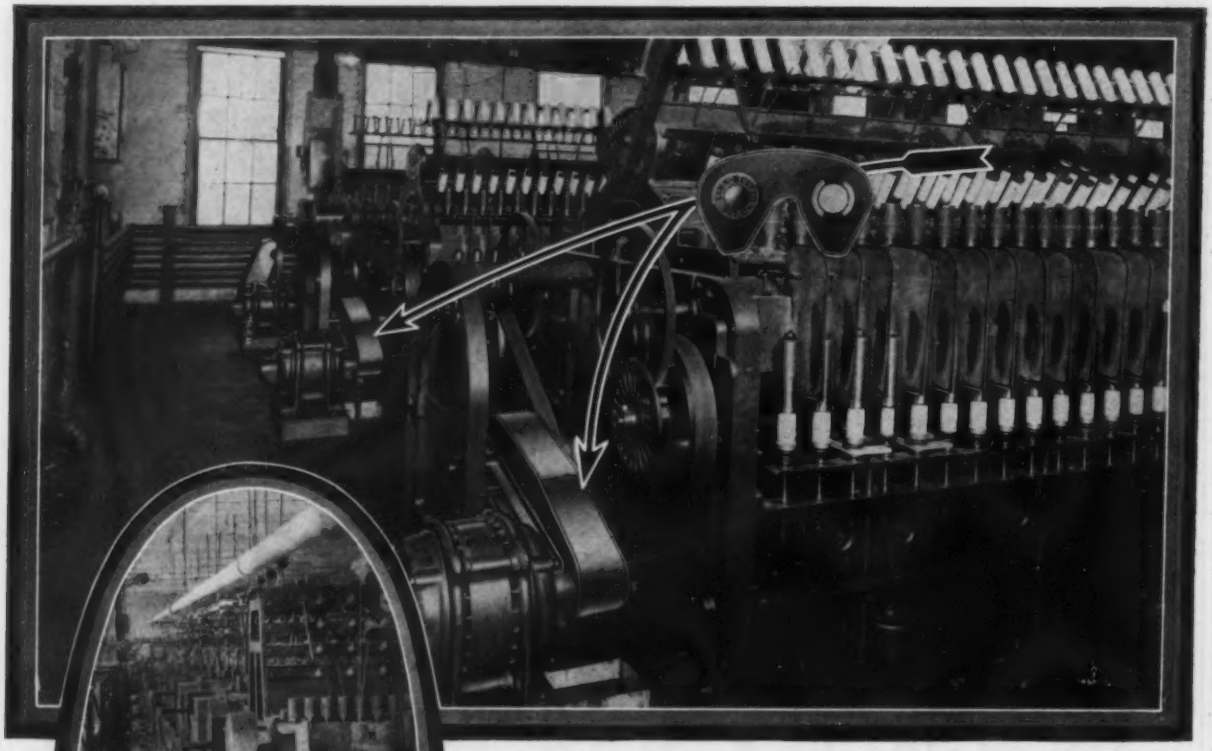
THE WHITE TEXTILE BOOK

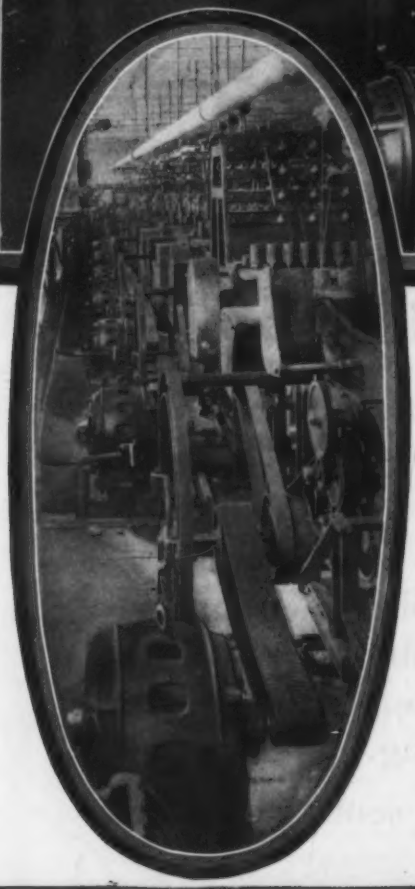
Our new book, "White Trucks in the Textile and Allied Industries," is now ready for distribution.

The booklet tells how textile manufacturers are using White Trucks to solve their many transportation problems and shows the possibilities of greater profits through the wider application of motorized hauling.

A copy of the booklet will be sent to anyone interested.

THE WHITE COMPANY
CLEVELAND





See Drives Like These at Our Greenville Exhibit

TEXTILE mills need positive drives. Slipping belts with their jerky pickup often means broken threads resulting in the production of an unwarranted amount of "seconds."

Link-Belt Silent Chain Drives are "flexible as a belt, positive as a gear, more efficient than either." They transmit power without slip or loss and on actual test prove themselves 98.2% efficient.

See these drives at the Southern Textile Exposition at Greenville, S. C., May 5th to 10th. You'll find them at space 203, 204 and 205. If you can't come to the exposition, write for our Textile Book No. 258.

LINK-BELT COMPANY 229

PHILADELPHIA CHICAGO INDIANAPOLIS

Boston—49 Federal St. New Orleans—C. O. Hinz, Hibernia Bank Bldg. Other Offices in Principal Cities

Southern Representative, J. S. Cothran, Com'l Bank Bldg., Charlotte, N. C.

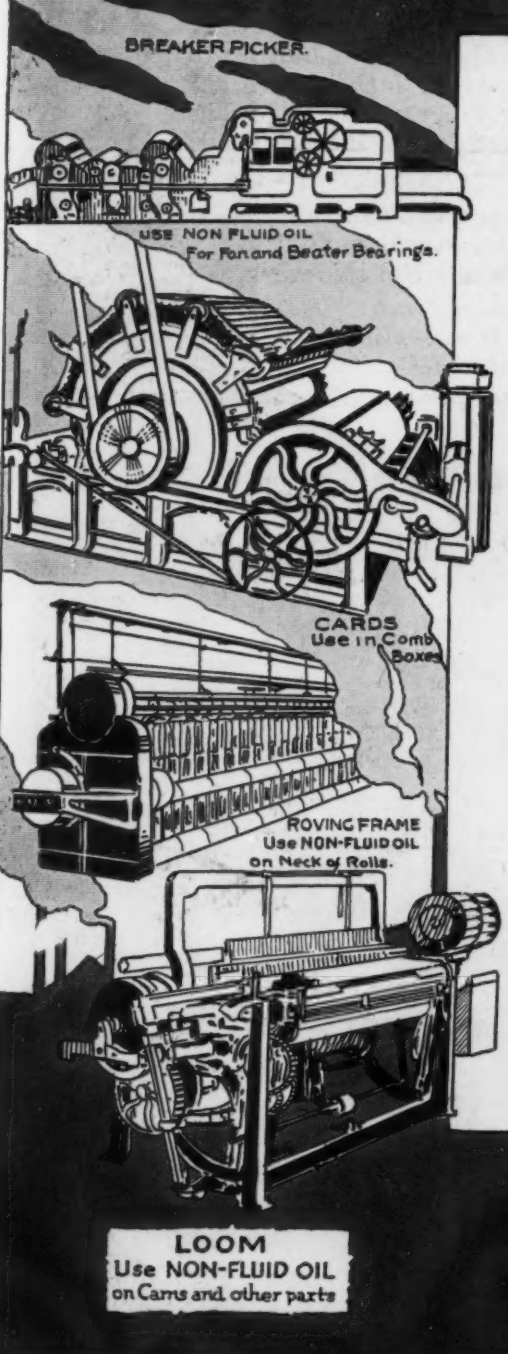
LINK-BELT SILENT CHAIN DRIVES

We Also Make

- ☐ Elevators and Conveyors
- ☐ Link-Belt and Sprockets
- ☐ Silent Chain Drives
- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Locomotive Cranes
- ☐ Wagon Loaders
- ☐ Coal and Ashes Systems

Write for Catalogs
Place X in Square

NON-FLUID OIL


BREAKER PICKER.
USE NON FLUID OIL For Fan and Beater Bearings.
CARDS Use in Comb Boxes
ROVING FRAME Use NON-FLUID OIL on Neck of Rolls.
LOOM Use NON-FLUID OIL on Cams and other parts

PROTECT YOUR PRODUCT FROM OIL STAINS

WITH the present cost of raw cotton, it has become more and more imperative for the textile manufacturer to reduce spoilage from oil stains to a minimum.

This can be accomplished by the use of

TRADE MARK NON-FLUID OIL REGISTERED IN UNITED STATES PATENT OFFICE

Special Textile Lubricants

NON-FLUID OIL is manufactured from the very highest grade petroleum which by a special process has been reduced to a non-dripping consistency. The striking advantages of this lubricant may be readily seen when you consider the enormous losses due to stained goods that usually confront the textile manufacturer.

Saving in power—Reduction of machinery upkeep costs.—Increased production and increased profits are the advantages accruing from NON-FLUID OIL. These are explained in our Bulletin on "Lubrication of Textile Machinery." Send for your copy today.

New York & New Jersey Lubricant Co.

165 Broadway **New York**

Send in this coupon for Testing Samples. They are free.

Branches: Atlanta, Ga., Charlotte, N. C. Lewis W. Thomason, District Mgr. Charlotte, N. C.

COUPON

We would like to try NON-FLUID OIL

For_____

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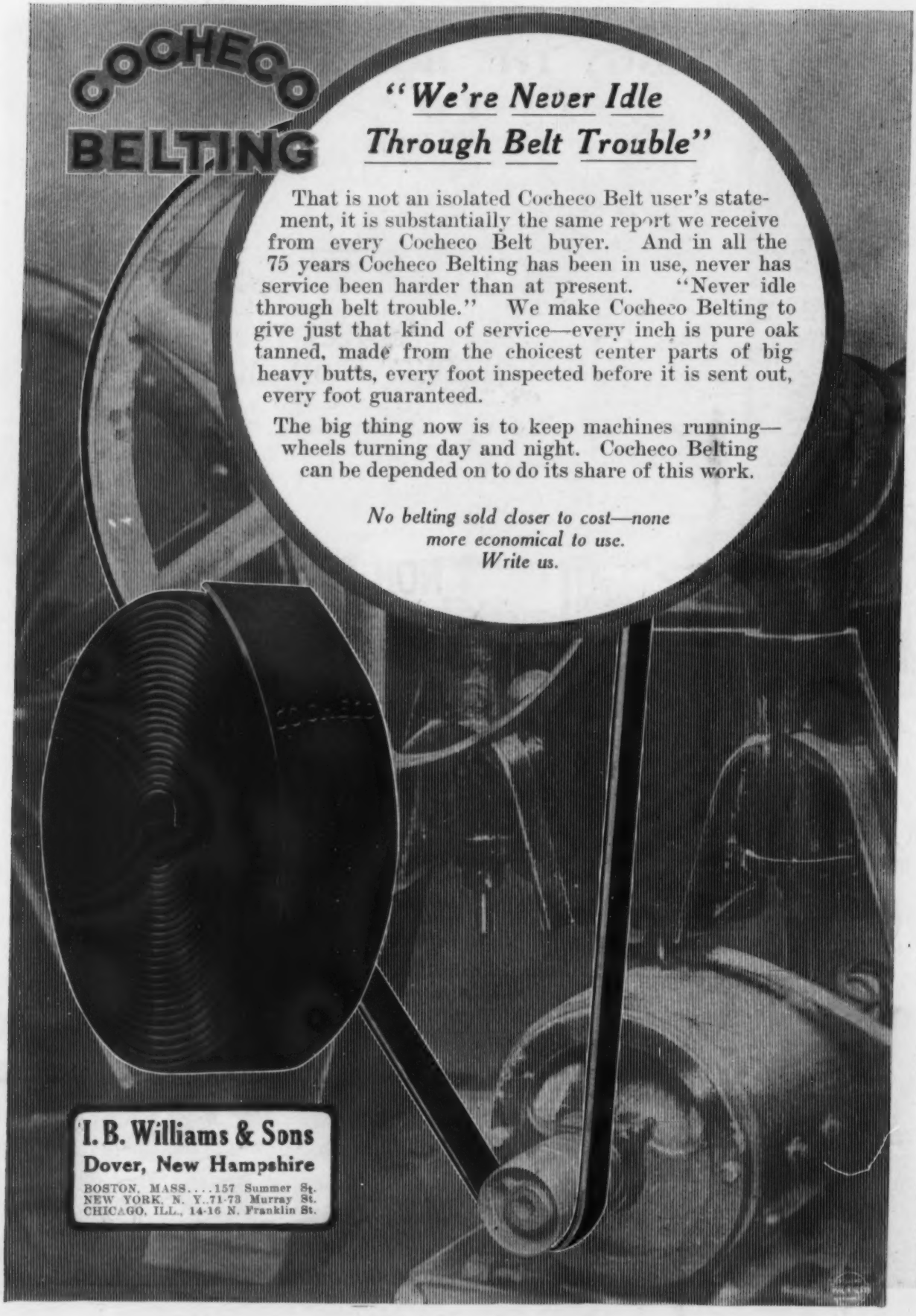
COCHECO
BELTING
"We're Never Idle Through Belt Trouble"
That is not an isolated Cocheco Belt user's statement, it is substantially the same report we receive from every Cocheco Belt buyer. And in all the 75 years Cocheco Belting has been in use, never has service been harder than at present. "Never idle through belt trouble." We make Cocheco Belting to give just that kind of service—every inch is pure oak tanned, made from the choicest center parts of big heavy butts, every foot inspected before it is sent out, every foot guaranteed.
The big thing now is to keep machines running—wheels turning day and night. Cocheco Belting can be depended on to do its share of this work.
No belting sold closer to cost—none more economical to use.
Write us.
I. B. Williams & Sons
Dover, New Hampshire
BOSTON, MASS....157 Summer St.
NEW YORK, N. Y..71-73 Murray St.
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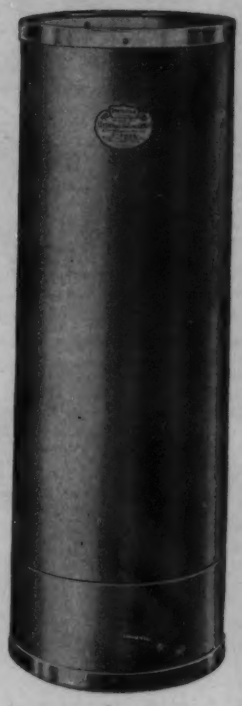
BUY THE BEST!
Buy
"Leatheroid"
RECEPTACLES

Constructed of superior fibre—Smooth Finish—Best for service and for standardization of your mill equipment.

WE INVITE YOUR INSPECTION OF LEATHEROID RECEPTACLES AT THE GREENVILLE EXPOSITION, BOOTHS NUMBERS 301, 302, 303 AND 304.

This is a standard box for mills, strong and well constructed.

☛Note the new steel corners protecting.



"LEATHEROID" NO. 1 SEAMLESS ROVING CAN.

Patented "Leatheroid" rolled top, rolled in and under two and one-half times, having no steel rim underneath the roll to break the can. Solid steel bottom, steel chime, 6 in. kicking band. 10 x 36, 12 x 36.

"LEATHEROID" FACTORY BOX NO. 3

"LEATHEROID" NO. 2 SEAMLESS ROVING CAN.

Latest improved construction, polished steel metal top rim, solid steel bottom, steel chime, 6 in. kicking band. 10 x 36. 12 x 36.

Other sizes riveted.

SOLD BY THE
Leading Southern Mill Supply Houses

"LEATHEROID" NO. 3 MILLHOUSE CAR.

Standard Sizes:
32 x 18 x 18 — 42 x 24 x 26
36 x 24 x 24 — 48 x 30 x 30

"LEATHEROID" COMBINATION DOFFING CAR.

Stationary Box 12 x 12 x 18
Loose Box 18 x 12 x 18
Many other sizes.

"LEATHEROID" STEEL-CLAD NO. 2 CAR.

Standard Sizes:
32 x 18 x 18 — 42 x 24 x 26
36 x 24 x 24 — 48 x 30 x 30

Rogers Fibre Company
Leatheroid Sales Division
1024 Filbert Street, Philadelphia

ACME

BALE TIES and BUCKLES

ASIDE from the fact that your bales are more sightly, they are also more secure, when strapped and fastened with Acme Ties and Buckles.

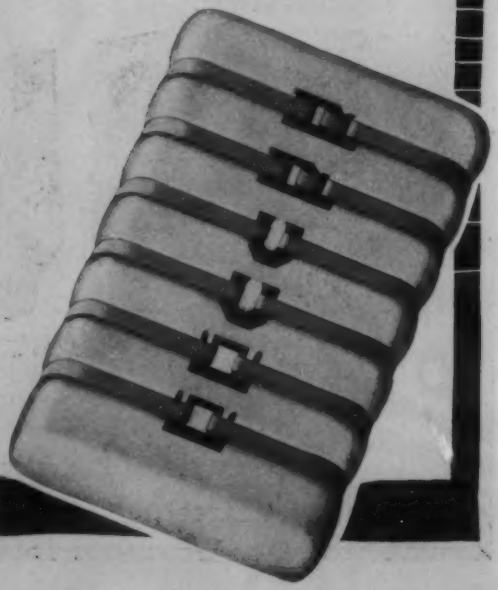
The latter is compulsory, the former is a matter of pride, but pays large dividends to the manufacturer whose product is in direct competition with the best mills of the world.

Therefore, sightliness is a vital feature and deserves your earnest consideration.

No. 9 Acme Bale Buckle.

We also manufacture steel and wire box strappings and steel floor matting.

Write for our new catalogue which illustrates them all.



Acme Steel Goods Company

Works: Chicago.

BRANCH OFFICES:

10 to 14 Tift Street, Atlanta.
Queen & Crescent Building, New Orleans.
295 Lafayette St., New York City.
San Francisco—Los Angeles—Montreal, Que.

Strom BEARINGS

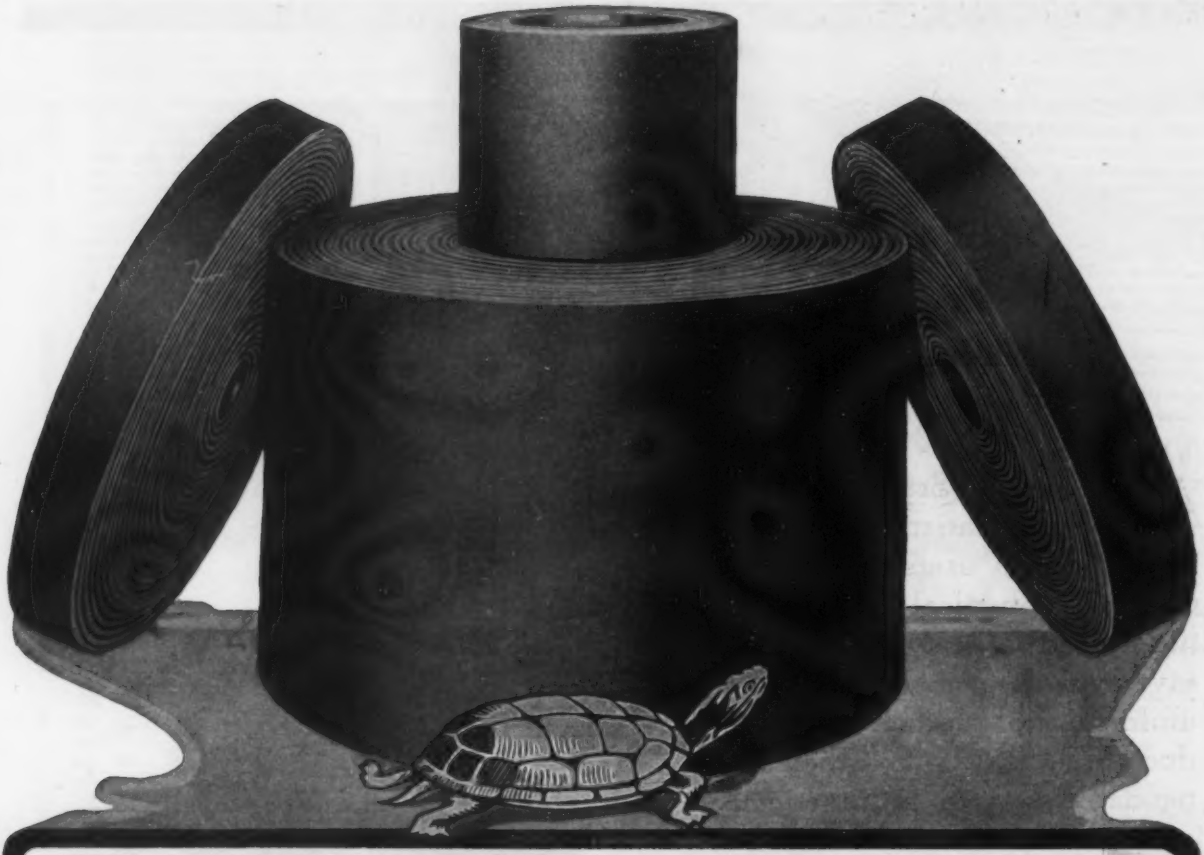
AMERICAN. Strom Bearings are American made bearings for American users. They are especially practical for the textile industry. They save power, save equipment, help to assure a uniformity of product and to reduce fire hazard. By their dependable service in practically every line of American industry, they have proved themselves to be a real economy wherever a shaft turns.

See our exhibit at the Southern Textile Exposition, Greenville, S. C., May 5-10th.

U. S. Ball Bearing Mfg Co.

(*Conrad Patent Licensee*)

Palmer Street and Kolmar Avenue, Chicago Illinois



LADEW

"TURTLE"

Waterproof Oilproof Timeproof

The utmost in power transmission capacity—the utmost in durability—the utmost in time-proof quality—the utmost in moisture resistant properties—besides these essential values, can any price-difference be considered? These are the values which the **"Turtle"** price buys—values which, extended over a long period of years, make first cost to be forgotten in the service rendered. Today, as never before, value counts above price. **"Turtle"** stands for highest belting value.

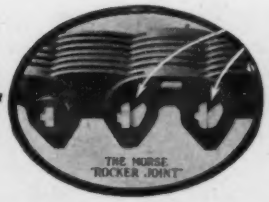
EDW. R. LADEW CO., INC.
GLEN COVE, NEW YORK, U.S.A.

Branches and Representatives in All Principal Cities of the World Carry Complete Stocks. Look in your 'Phone Book for Local Address.

HOYT'S TURTLE
EDW. R. LADEW CO. INC.
WATERPROOF LEATHER BELTING

AP-25

The Sign of Efficiency



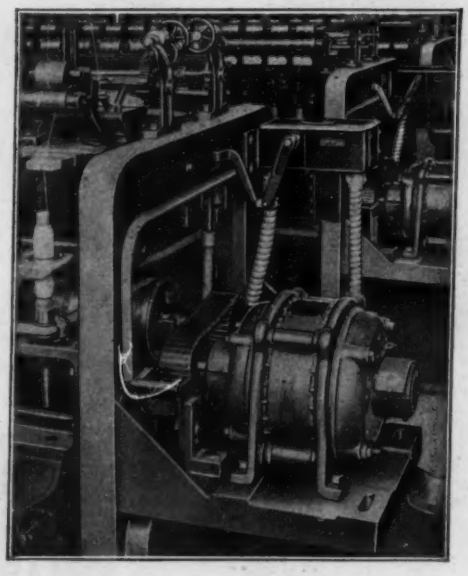
The Sign of Durability

Flexible as a Belt

Positive as Gears

Oil Bath not required

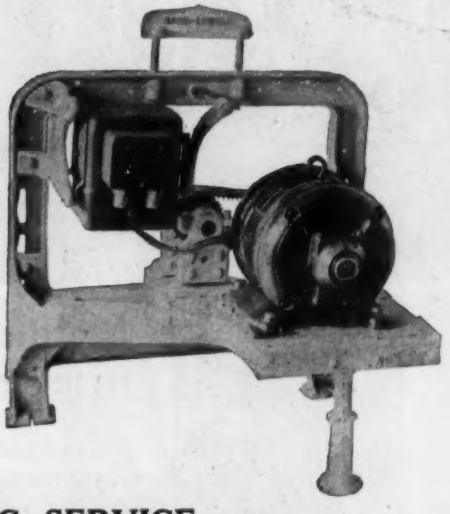
THE RELIABLE TEXTILE DRIVE



Replacing leather belts in every branch of the textile trade.

You cannot afford to depend on slipping, short life, wasteful belts. Textile machines can hold their output only when drives are reliable.

MORSE DRIVES give steady, clean service.



Notice, in mills equipped with Morse Silent Chain Drives, the light, the silence, the cleanliness, the wholesome sweet air. Observe the neat and healthy, happy appearance of all employees.

MORSE ENGINEERING SERVICE

Writing History in increased production and low cost. Confer with our experts relative DRIVES that may require speeding up, or increase power, or for special service in dust, gases, acid fumes, etc. When belts are giving trouble call on MORSE.

MORSE CHAIN CO. Largest Manufacturers of Silent Chains in the World ITHACA, N. Y.

MORSE ENGINEERING SERVICE **ASSISTANCE WITHOUT OBLIGATION.**

Address Nearest Office

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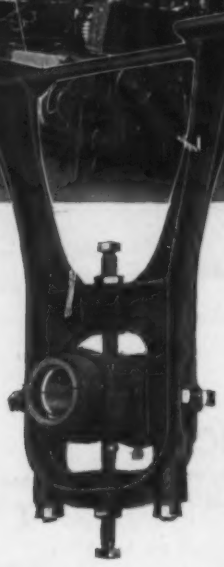
DETROIT, MICH......1003 Woodward Avenue
GREENSBORO, N. C......805 Ashboro Street
NEW YORK CITY,..... 50 Church St., Hudson Term. Bldg.
PITTSBURGH, PA......Westinghouse Bldg.
SAN FRANCISCO, CAL......Monadnock Bldg.
ATLANTA GA......Earl F. Scott, M. E., 702 Candler Bldg.
CANADA.....Jones & Glassco, Regis'd. Montreal, St. Nicholas Bldg. Toronto, Bank of Hamilton Bldg.
KANSAS CITY, MO......Morse Engineering Co., R. A. Long Bldg.
MINNEAPOLIS, MINN......Strong-Scott Mfg. Co. 413 Third St.
ST. LOUIS, MO..... Morse Engineering Co. Chemical Bldg.



Motordriven Oneida equipped line shafts meet ever requirement in a textile mill

Dodge-Oneida friction clutches assure separate control of each machine at a much lower cost than the same result can be secured by the use of individual motors.

Group driving prevents overloading the motors.

Dodge-Oneida transmission machinery is designed by Dodge Engineers and built in shops by Dodge workmen. It's right from the initial design to the finished product.

We are glad to take the responsibility for its effective, economical, and continuous service.

Get in touch with the Oneida dealer in your territory. We prefer to receive your order through him.

—are you reading it?

send your name.

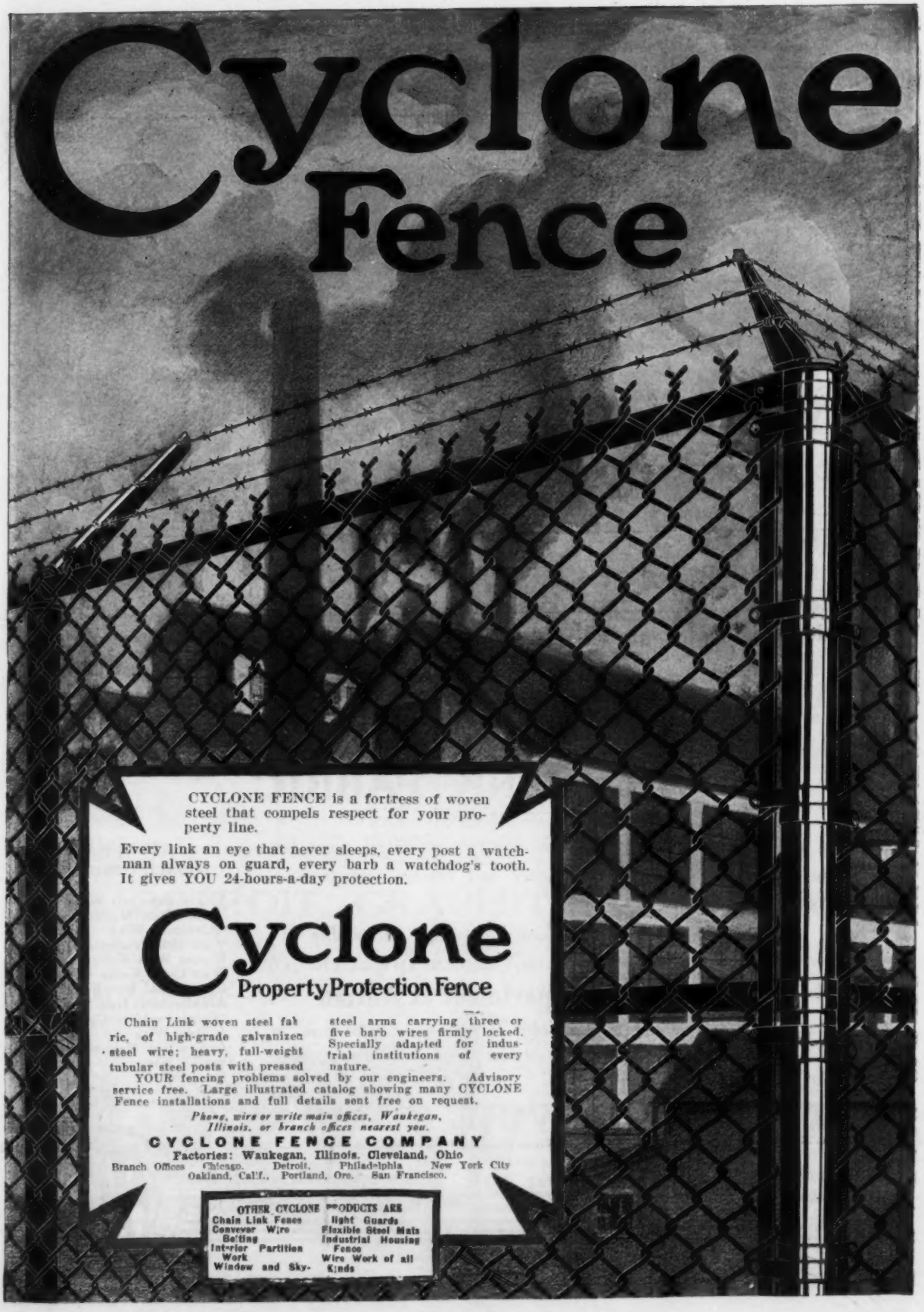
Dodge Sales & Engineering Company

Distributor of the products of the Dodge Mfg. Co., and Dodge Steel Pulley Corp.

General Offices: Mishawaka, Ind. Works: Mishawaka, Ind., Oneida, N.Y.

Dodge Branch Warehouses:

Philadelphia Cincinnati New York Chicago St. Louis Boston Atlanta Pittsburgh
Minneapolis Dallas Providence, R. I. Seattle Newark, N. J.



CYCLONE FENCE is a fortress of woven steel that compels respect for your property line.

Every link an eye that never sleeps, every post a watchman always on guard, every barb a watchdog's tooth. It gives YOU 24-hours-a-day protection.

Cyclone
Property Protection Fence

Chain Link woven steel fabric, of high-grade galvanized steel wire; heavy, full-weight tubular steel posts with pressed steel arms carrying three or five barb wires firmly locked. Specially adapted for industrial institutions of every nature.

YOUR fencing problems solved by our engineers. Advisory service free. Large illustrated catalog showing many CYCLONE Fence installations and full details sent free on request.

Phone, wire or write main offices, Waukegan, Illinois, or branch offices nearest you.

CYCLONE FENCE COMPANY
Factories: Waukegan, Illinois. Cleveland, Ohio
Branch Offices Chicago. Detroit. Philadelphia New York City Oakland, Cal'f., Portland, Ore. San Francisco.

OTHER CYCLONE PRODUCTS ARE
Chain Link Fences
Conveyor Wire Belting
Interior Partitions
Window and Sky-Work
Light Guards
Flexible Steel Mats
Industrial Housing
Fence
Wire Work of all Kinds

This Wire-Link Fabric Aids Plant Efficiency and Economy

IN a score of places in and around your plant Page Wire-link fabric—the result of a generation of experience — will make possible greater operating efficiency and save loss.

The amount of the annual loss in open plants through the depredations of petty thieves is almost unbelievable until it is checked.

PAGE
WIRE-LINK FABRIC

Here is a fire-proof, vermin-proof, thief-proof fabric ideal alike for exterior fencing, interior partitions, machinery and window guards and many other uses.

It does not obstruct light, but it does bar every undesirable intrusion.

Write Our Engineering Department at Adrian

This department is maintained especially to cooperate with you in the solution of any problems of exterior or interior enclosure. Please make full use of it.

OTHER PAGE QUALITY PRODUCTS

Special Analysis Wire
Armco Iron Welding Wire
Galvanized Wire
Wire Mill Products
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Ornamental Iron Fence
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Armco Iron Magnet Core Wire
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Rope Wire

PAGE STEEL & WIRE COMPANY

Formerly Page Woven Wire Fence Company
Established 1883

ADRIAN, MICHIGAN *Factories* MONESSEN, PENNA.

Branches: New York, 30 Church Street; Pittsburgh, 644 Union Arcade
Detroit, 660 W. Fort St.; Chicago, 175 W. Jackson Boulevard

STEEL AND WIRE — PAGE — QUALITY PRODUCTS

DEGRACO PRODUCTS

Superior Graphite Paint
A metal protective coating.

Degraco House Paint and Varnish

Sta-White
The pure white oil paint for industrial interiors.

Degraco Brick and Concrete Paints

Degraco-Tone
An interior flat wall finish.

Degraco Gas Holder Paint

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A damp-proof coating.

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Acid Resisting Paints
Machinery Enamels
Flat Machine Colors
Iron Filler
Wood Preservative
Pipe Joint Cement
Boiler Graphite
Lubricating Graphite

Special Paints for Special Purposes

WHITE THE YEAR ROUND

Keep your plant as white as the mountain peak.

Brighten up your workrooms with *Sta-White*, and make sure they will stay white throughout the year—and year after year. *Sta-White*—the pure white oil paint—applied on walls and ceilings, acts as one great reflector that improves to a wonderful degree the lighting conditions throughout the entire plant.

Sta-White is recognized as a leader in the field of mill whites because of its many sterling features—proven in service:

Extreme ease of application
Large covering capacity
Purity of tone
Freedom from discoloration
Durability and low ultimate cost.

Sta-White has won out in tests.

DETROIT GRAPHITE COMPANY

MAKERS OF

Paints in all colors for all purposes

107 Twelfth St. **DETROIT, U.S.A.**

STA-WHITE MAKES THE DIFFERENCE

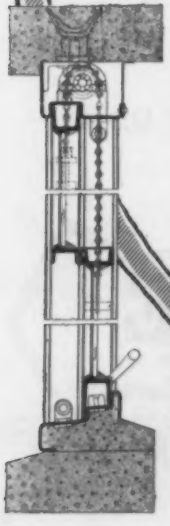
Lupton
Lupton Steel Sash
Pivoted Factory Type
Counterbalanced Type
Pond Continuous Sash
for sawtooths, monitors and side walls
Pond Operating Device
for long lines of sash
Lupton Rolled Steel Skylight
"INVESTMENT VALUE"

Hot Windless Days

—the kind that make any movement an effort! A hurry order must be filled—the factory must be kept running—the sick list must be kept down.

If you've never yet appreciated Lupton Counterbalanced Sash, you will on such days. Its large ventilating area—⅓ or ⅔ the glass area,—the balanced top and bottom openings, and the distance between them, all insure maximum air movement.

Lupton
STEEL SASH
COUNTERBALANCED TYPE
PATENTED



was designed to give maximum ventilation with individual windows. It opens easily, shuts tight, and is readily used in connection with an overhead line of Pond Continuous Sash if desired. For most wide multiple-story factories it is the ideal sash.

It is strongly made of heavy rolled sections with oxyacetylene welded sash joints. Head, meeting rails and sill are weather-tight by design, without stripping. The large lights make cleaning and painting easy.

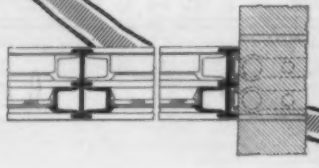
Booklet, "Air, Light and Efficiency," tells how we helped the owners of some famous factories to get maximum returns from their investment in Lupton Products. It's free to plant officials, architects and engineers.

David Lupton's Sons Company

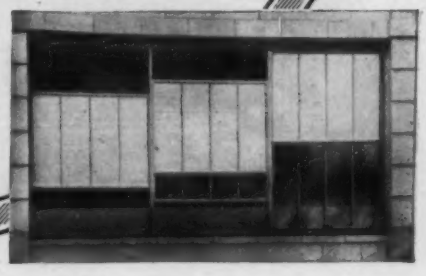
Amber St. & Allegheny Ave. Philadelphia, Pa.

Makers of Modern Equipment for Daylighting and Natural Ventilation

Canadian Manufacturers: THE A. B. ORMSBY CO., Ltd., Toronto



BUILD NOW
and begin earning the profits on a modern plant



The Village Beautiful

Is Your Village In As Good Shape As Your Mill?

Nothing attracts intelligent operators so much to a mill as well-kept streets and comfortable, cheerful surroundings.

The picture at the top left shows a village street at the Judson Mills before improvements were made. The others indicate the character and permanence of our construction work.

We install Waterworks, Sewage Systems, Curbing, Street Paving, Grading and Top Soil.

Estimates Gladly Submitted.

Slattery & Henry, Inc.

Mills Building, Greenville, S. C.

L. P. SLATTERY, President & Secretary.

J. B. HENRY, Vice-Pres. & Treas.

SOUTHERN OFFICE:
Greenville, S. C.
J. L. BUSSEY, Gen. Mgr.

HEAD OFFICE:
310 Chestnut Street
PHILADELPHIA, PA.

N. P. SLOAN COMPANY

COTTON MERCHANTS AND EXPORTERS

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FALL RIVER, MASS.
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CHARLOTTE, N. C.
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SPARTANBURG, S. C.
AUGUSTA, GA.
LAGRANGE, GA.
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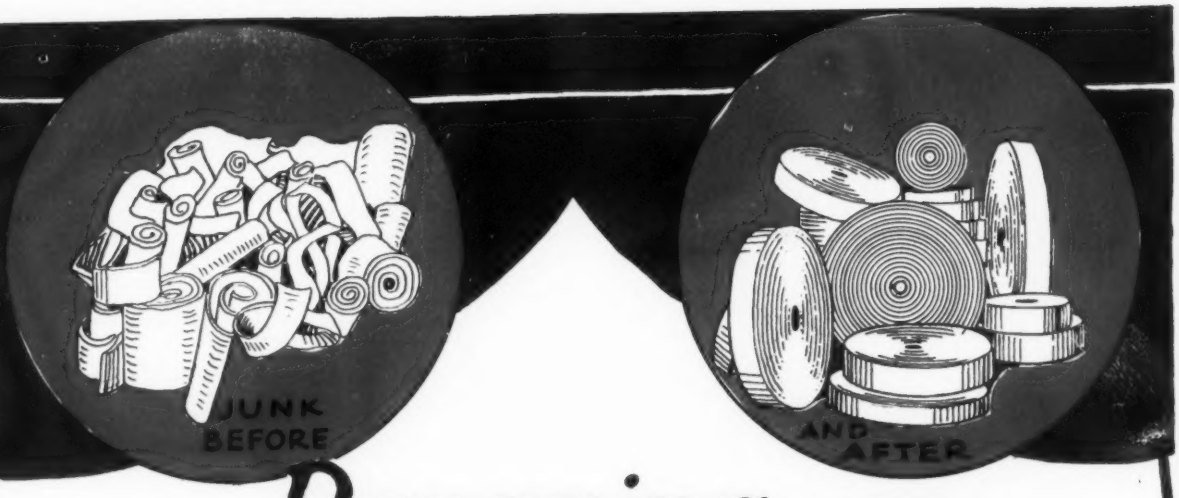
Good Electric and Gas Service

At Reasonable Rates

Southern Public Utilities Company

GREENVILLE, S. C.



Renewing OLD BELTS

WE take the old scraps, short pieces and worn belting which you are about to consign to the waste pile and transform it into good, serviceable belting, of any desired width, at a trifle the cost of new belting.

No matter in what condition the pieces may be, how badly worn or begrimed with grease and dirt, they come back to you in a form that is not recognizable, ready for instant service again.

The Work is First-Class. The Saving is Worth While.

We are Southern Distributors for THE BRADFORD BELTING CO., Cincinnati, Ohio, manufacturers of the famous "MONARCH" Leather Belting.

We also handle everything in Textile Leather Specialties such as Sheep Skins, all kinds of Loom Strapping, Leather Bumpers and Pickers.

Save Your Old Belts

Send Us Trial Shipment

THE GREENVILLE BELTING CO.
GREENVILLE, S.C.

CAROLINA SUPPLY COMPANY

CORNER OF COURT AND JACKSON STS., GREENVILLE, S. C.

The Home of all First Class
Cotton Mill and
Electrical Supplies

BE SURE TO VISIT OUR PLANT WHILE AT THE EXPOSITION.

A Hearty Welcome Awaits
You.

WE PACK CAREFULLY AND SHIP PROMPTLY
WE GIVE YOU WHAT YOU WANT WHEN YOU WANT IT

"SERVICE ALWAYS"

Cooper & Griffin

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GREENVILLE, S. C.
SPARTANBURG, S. C.
GREENWOOD, S. C.
CHARLOTTE, N. C.

Greenville, S. C.

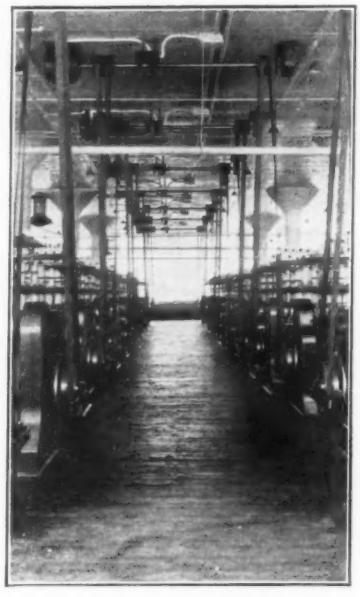
HUNTINGTON & GUERRY, Inc.

"TROUBLE-PROOF"

Electrical Installations

For Textile Mills

INSIDE AND OUT



Spaces 264-265-266-267

THIRD SOUTHERN TEXTILE EXPOSITION

MAY 5-10, 1919

HUNTINGTON & GUERRY TROUBLE PROOF ELECTRICAL INSTALLATIONS

Greenville, South Carolina

Southern Textile Machinery Co.

110-112 East McBee Ave. Greenville, S. C.

DEALERS IN

Cotton Mill Machinery and Supplies

Electrical Apparatus Steam Plants

Complete Equipments Bought and Sold

FISKE-CARTER CONSTURCTION CO.

BUILDERS

Greenville, S. C. Worcester, Mass. Spartanburg, S. C.

SPOOLS — SKEWERS — UNDERCLEARERS

Warper---Twister---Plain and Metal Shield.

A Southern Plant That Has Made Good.

Ask the Mill Superintendent. He Knows.

GREENVILLE SPOOL & MFG. COMPANY

GREENVILLE, S. C.

Quality Yarns

These Trademarks are the Guarantees

When Buying Yarns

—look for the trademark—the pride mark, of these famous spinning mills. They are your assurance of quality in every instance.

It is our aim to render the most efficient service to the trade by supplying yarns made from the best long staple cotton.

—to inspect carefully all packing and shipments.

—to give prompt attention to all inquiries.

—to see that the goods go forward at the time promised.

Combed Peelers, 30s to 80s, single and ply. Regular and reverse twist.

Combed Sea Island, gassed and ungassed, 30s to 80s, single and ply, reverse twist.

Carded Peelers, 40s, 50s and 60s.

Doubled Carded Peelers, 30s to 60s.

Our production is sold directly through, and exclusively by, our general sales offices at 131 East 23rd Street, New York City.

H. A. FLORSHEIM, Sales Mgr.

Long Distance: 812 Gramercy.

GRAY MANUFACTURING CO.
PARKDALE MILLS, Inc.
ARLINGTON COTTON MILLS
ARROW MILLS, Inc.
FLINT MANFG. CO.
MYRTLE MILLS, Inc.

GREENVILLE, S. C.

Is an industrial and educational center, but above all it is a good town to live in. Write the Secretary of the Chamber of Commerce for some interesting information.

JUDSON MILLS

The Norwood National Bank

Greenville, S. C.

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Capital, Surplus and Profits

$600,000.00

Deposits $3,000,000.00

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Liberal Accommodations Are Extended to Textile Institutions

An Efficient Lighting System

Will increase your production.

Will cut down the danger of accidents.

Will make happier and healthier employees.

Will save you money.

Engineering service on any lighting problem.

Ideal Electric Company

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RICHARDSON-McALISTER CO.

Buyers and Contractors of

Cotton Mill and Knitting Mill Waste

Dealers in

Cotton Mill and Knitting Mill Waste Pickings, Linters and Low Grade Cotton

Manufacturers of Mattress and Batting Stocks

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Palmetto Building, Greenville, S. C.

Gravel, Tin, Slate or Tile Roofing

Slasher Hoods and Cotton Piping

J. A. Piper Roofing Co.,

GREENVILLE, S. C.

Nurses Home
In the Village of
THE ERLANGER COTTON MILLS CO.,
Lexington, N. C.

Cloth used in B. V. D. Underwear is made by employees living in this village.

We furnish plans and supervision for the permanent construction of Buildings, Street Work, Sidewalks, Sewerage, Water Supply and Electric Lighting for Industrial Villages.

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SERVICE

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E N G I N E E R

GREENVILLE · SOUTH · CAROLINA

The UTSMAN QUILL CLEANING MACHINE

CLEANS QUILLS

It does it efficiently, smoothly and continuously. That's why so many mills are using them and are sending in repeat orders.

We want to show you a real Quill Cleaning Machine at the Southern Textile Exposition. Booths 38 and 39.

Write for our Catalogue.

THE TERRELL MACHINE CO.

INCORPORATED

CHARLOTTE, N. C.

COTTON MILL BUSINESS

This Bank enjoys a good patronage from the cotton mills of this section, and believes that it has contributed somewhat toward their success. We hope for a continuance of this patronage, and shall be glad to talk to the proper officer of any mill in this section looking towards the opening of an account.

We wish to extend a hearty welcome to all visitors to the Textile Exhibit and to assure them of our willingness to do what we can to add to the pleasure and comfort of their stay in Greenville.

FIRST NATIONAL BANK

Cor. Main St. and McBee Ave.

Greenville, S. C.

THE FOOD DRINK

Trade Mark

Bludwine

FOR YOUR HEALTH'S SAKE

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Makes You Glad You are Thirsty

Shafts, Pulleys, Hangers, Belting, Packing, Lacing,

BOILERS

For Mills and Public Works. Low Prices

Tanks, Stacks, Smoke Flues, Boiler Tubes, Pipe, Valves, Fittings, Kerosene and Gasoline Engines, Wood Saws, Pumps, Heaters, Injectors, Engine Supplies and Repairs for Mills, Hotels, Public Works.

Iron and Brass Castings Cast Every Day.

LOMBARD Foundry, Machine, Boiler Works, and Supply Store.

AUGUSTA, GEORGIA.

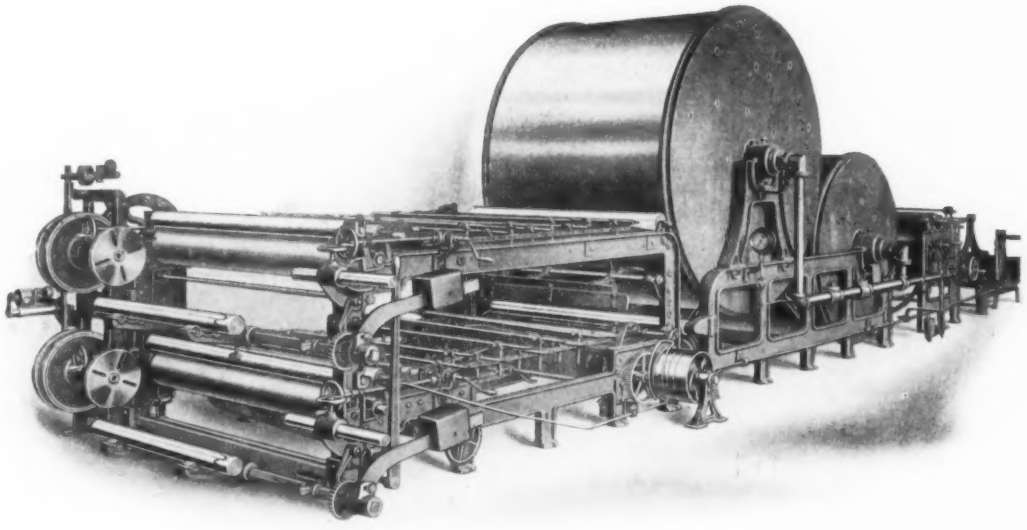
SACO-LOWELL SHOPS

TEXTILE MACHINERY

Complete Cotton Mill Equipments

Including

Warping and Slashing Machinery



Cylinder Slasher with Double Headway

...SHOPS AT...

Newton Upper Falls, Mass., Lowell, Mass., Biddeford, Maine

EXECUTIVE OFFICES

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ROGERS W. DAVIS, Southern Agent, Charlotte, N. C.

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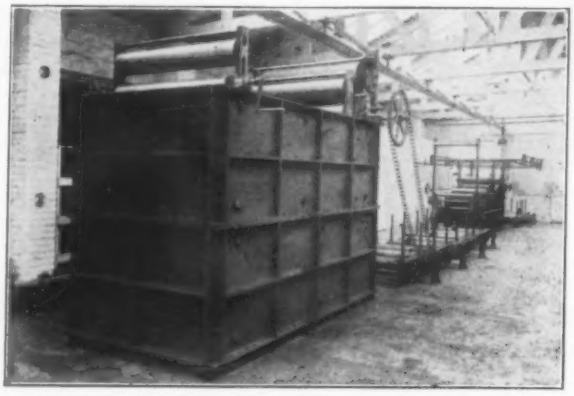
COCKER

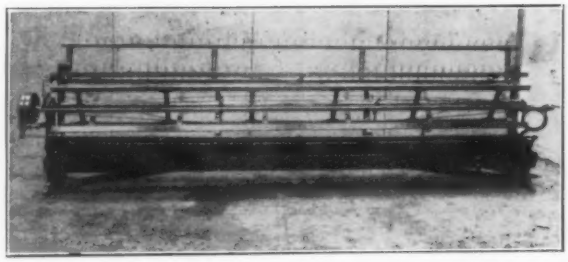
REELS

CONTINUOUS WARP DYEING SYSTEM FOR DYEING INDIGO

System illustrated below consists of standard size indigo vat with baling attachments with a capacity of twelve warps, a two compartment machine for boiling-out and a bottoming shade with balling attachments, also a compensator working between the two machines.

This system is in use in the largest mills in the country.





Machine illustrated above is the lightest running and most productive reel built, and the most easily handled by operators.

The method of breaking and doffing is unequalled.

Correspondence solicited.

Cocker Machine & Foundry Co.

Builders of Warpers, Beamers, Warp Dyeing Machines and Reels.

Gastonia, N. C.

Your Product is "Good to the Core"

Safe, and "carries itself" with sales compelling self-respect when wound for shipment or for sale, on

SONOCO

Tubes	or	Cones
Made of Selected Stocks Spiral Wound		The "Yarn Saver" The "True Standard"
Clean, Accurate, True		*There's a Secret in the Surface*

Southern Novelty Co., Manufacturers, Hartsville, S. C.

FOR USE WITHOUT RUNNING WATER

SANITARY SEWAGE DISPOSAL WITHOUT SEWERS

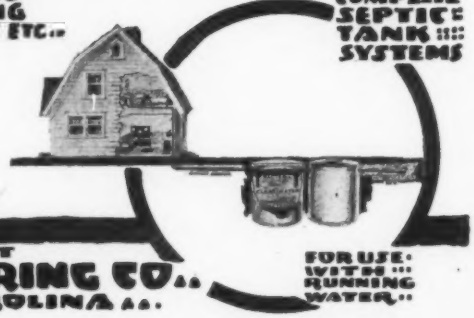
FOR RURAL HOMES MINING TOWNS INDUSTRIAL VILLAGES ETC.

NO CHEMICALS
NO SCAVENGING
FLY PROOF
ECONOMICAL

ENDORSED BY ALL HEALTH AUTHORITIES
FULL INFORMATION ON REQUEST

SANITARY ENGINEERING CO.
CHARLOTTE NORTH CAROLINA

SEPTIC TANK CLOSETS AND COMPLETE SEPTIC TANK SYSTEMS



FOR USE WITH RUNNING WATER

Millions of Figures Without an Error

Burroughs Offices are located in each of the cities listed below. Write or phone the nearest one for information on profitable uses of Burroughs Machines in cotton mill accounting.

CHARLOTTE, N. C.
R. S. Motte, *Manager*

CHATTANOOGA, TENN.
V. C. Piner, *Manager*

COLUMBIA, S. C.
A. E. Reaves, *Manager*

GREENVILLE, S. C.
Floyd Hughes, *Manager*

MACON, GA.
E. Swinford, *Manager*

MEMPHIS, TENN.
A. J. Doyle, *Manager*

RALEIGH, N. C.
D. E. MacCarthy, *Manager*

SAVANNAH, GA.
W. S. Craddock, *Manager*

FOR over thirteen years a Burroughs Adding Machine has been at work in the Cloth Room of one of the large cotton mills in the South, handling hundreds of amounts each day, without making a single error in the whole time.

When the truckman wheels a load of cloth on the scales, he calls off the yardage marked on each bolt. These amounts are listed on the Burroughs by a girl operator, and the total yardage is ready to print the minute the last amount is called. The machine furnishes a slip with the figures in duplicate (as illustrated below), one copy going with the bale and the other to the office.

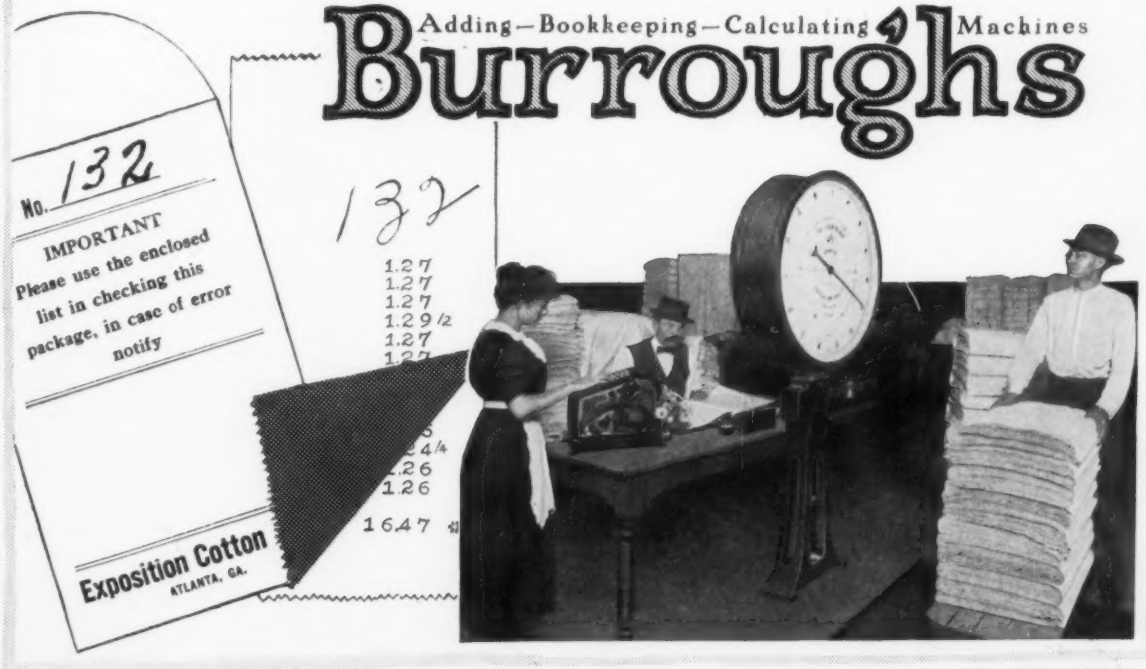
The machine adds fractions of yards as easily as full yards, giving the total in a small part of the time ordinarily required—and the answer is always the right one.

There are other methods of handling Cloth Room figures on Burroughs Machines in other mills—many mills are using machines for this work with equally satisfactory results. Other models are used in the offices of these mills, and wherever else there is figuring to do.

Any Burroughs man can show you many ways in which Burroughs Adding, Bookkeeping and Calculating Machines are being applied in cotton mill accounting—on ledger posting, statement making, invoicing, tabulating reports of all kinds, etc.,—and producing faster, more accurate work at less expense.

Adding—Bookkeeping—Calculating Machines

Burroughs



Electrical Supplies When You Need Them

QUICK SERVICE

WHEN in need of Lamps, Fuses, Safety Switches, Wiring Devices or Rubber Conduit Wire, remember that we have a stock right here in Atlanta from which shipments can go forward immediately--no delay

Wire or phone your orders and note the quick service at this end of the line.

CARTER ELECTRIC CO., **63 Peachtree, Atlanta**

TRUCKS
POWER OR HAND

CALLING MACHINES
COUNTING MACHINES

J. D. Collins

Sales Engineer

950 Grant Bldg., Atlanta, Ga.

Representing as I do, Companies of the highest standing, manufacturing goods worthy of all confidence, I am in a position to give *genuine* service in all problems connected with the conservation of time and labor and the installation of efficient handling equipment.

TIERING MACHINES
BALE AND CASE PILER

SPIRAL FIRE ESCAPES
BINS AND SHELVING

WITHOUT A RIVAL

THE great success and superiority of the STIEFF piano has been accomplished by the highest grade workmanship and materials used in our instruments.

The STIEFF piano has won the unbounded enthusiasm of musicians and music lovers in every hamlet, village, or city in the Southland.

The STIEFF Piano

is backed by the long service it has rendered to its thousands of customers who are satisfied with no other piano. Its unvarying and unexcelled tone and quality of workmanship explains in part, **why** our factories have been behind in deliveries. We are glad to announce that our factories can now take care of all orders promptly and we can ship from factory to customer direct.

The reasonable terms upon which the STIEFF piano is sold, makes it easy for Churches, Colleges, Schools, community workers and home-lovers to possess a STIEFF.

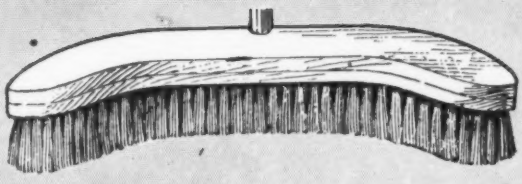
Write today for catalogue and price list.

CHAS. M. STIEFF, Inc.

M. D. Manning, Manager.

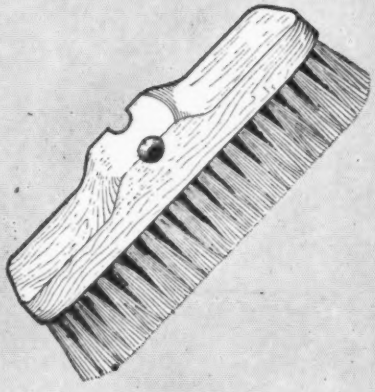
Charlotte, N. C. **219 South Tryon Street.**

FELTON



Felton of Manchester

SAFCO



IT takes a good brush to stand the use and abuse of long and severe service, and mill men recognize the superior quality of

FELTON BRUSHES

They are made from the best material and by expert workmen.

There is a brush for every use at the lowest price consistent with the high standard of quality.

Departments are maintained for the repairing and refilling of worn out brushes at Manchester, New Hampshire, and Atlanta, Georgia.

S. A. FELTON & SON CO.
Manchester N. H.
D. D. FELTON BRUSH CO.
Atlanta, Ga.

Felton of Atlanta

FELCO

BRUSHES

THE AMERICAN AUDIT COMPANY

100 BROADWAY, NEW YORK CITY

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Richmond	Baltimore	New Orleans	Philadelphia
Washington, D. C.	Milwaukee	San Francisco	London, E. C.
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Our Reports of Audit and Our Certificates of Condition and Operations, Are Known and Have Weight in the Financial Centers of the World

ATLANTA BRANCH:

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C. B. BIDWELL, C. P. A., Resident Vice President.

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MILLING MACHINES
GEAR CUTTERS
LATHES
PLANERS
SHAPERS
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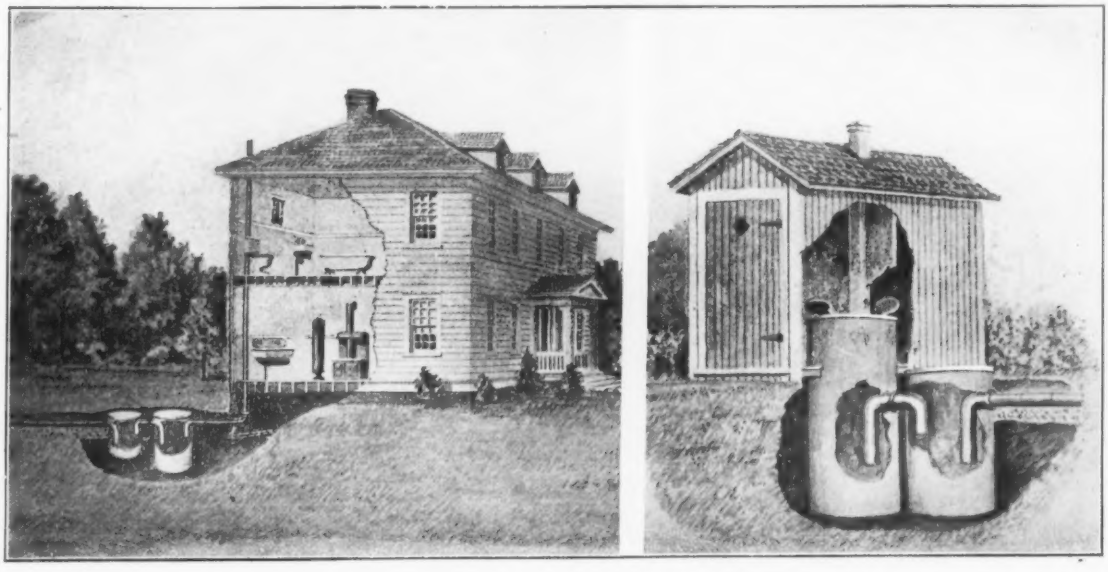
ELECTRIC MOTORS
ELECTRIC DRILLS
and GRINDERS
WELDING OUTFITS

SEEGER-WALRAVEN COMPANY

Machine Tools---Mill Supplies---Foundry Equipment

36-38 WEST ALABAMA STREET, ATLANTA, GEORGIA



SANISEP

TRADE MARK

The Most Sanitary System of Sewerage Disposal

THE day of the scavenger in industrial villages is passing. In place of former insanitary, disease-spreading methods hundreds of villages are now equipped with the "Sanisep System."

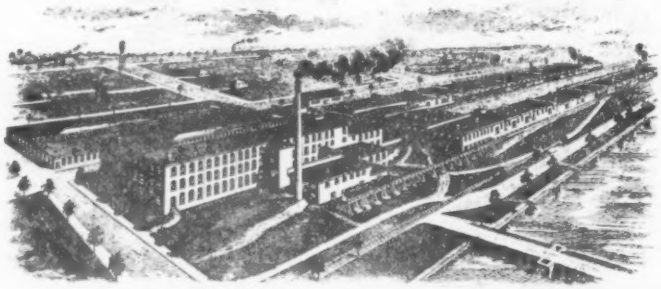
This system disposes of every particle of the sewage; no scavenger is required. There are no chemicals used, the soil is not polluted and no disagreeable odors are given off.

The output of your mill will soon show the effects of healthier, happier operatives. Let your first move be the installation of a "Sanisep" System.

Write for further information and prices.

Cement Products Company

Trust Bldg., Wilmington, N. C.



VALLEY WASTE MILLS

HILLSIDE COTTON MILLS, *OWNERS*

C V TRUITT, PRESIDENT
S Y AUSTIN, VICE PRES & GEN'L MGR
FULLER E CALLAWAY, TREASURER
J A PERRY, SECRETARY
CASON J CALLAWAY, MANAGER

La Grange, Georgia. U.S.A. April 7, 1919

To the Southern Cotton Manufacturers:

On account of the return of competition to cotton waste brought about by the return of cotton linters for commercial consumption we have contemplated that the production of waste for 1919 would be greater than the demand.

Being familiar with the fact that cotton mills do not like to hold their accumulations of waste we have greatly increased our storage capacity and are therefore in position to purchase your output, and allow you to ship it to LaGrange once monthly at your convenience.

Yours truly,

By Cason Callaway
Asst. Treas. & Mgr.

BIRD-WILCOX COMPANY, INCORPORATED

WELDING CUTTING APPARATUS

We thoroughly cover the South

WITH shipping facilities unequalled orders placed with us for welding and cutting equipment, supplies and gas can be handled within a few hours after receipt. Atlanta is less than 24 hours away from most of the cotton mills. In cases of emergency shipments can reach you with the minimum delay.

Oxygen shipments are made promptly from the office nearest you, whether it is Atlanta, Charlotte, Savannah, Chattanooga or New Orleans. These five depots have been selected with an eye to your demands.

We have a corps of expert welders ready to come to your plant at a moment's notice to handle unusual breakdowns too big or too complicated for your force. These men have had years of experience and will do the work to your satisfaction. Experts are also sent to instruct your men to handle the equipment.

All Bird-Wilcox material is of the highest quality and is sold strictly on that basis. The service offered by us and the quality of the goods insures your satisfaction.

A FEW OF THE HUNDREDS OF SOUTHERN USERS OF B-W APPARATUS.

Massachusetts Mills
Erwin Cotton Mills
Pell City Mfg. Co.
Eagle & Phoenix Mills
Indian Head Mills of Ala.
Lanett Cotton Mills
Revolution Cotton Mills
Pacolet Mfg. Co., Pacolet, S. C.
Pacolet Mfg. Co., New Holland, Ga.
Pacific Mills
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Erlanger Cotton Mills
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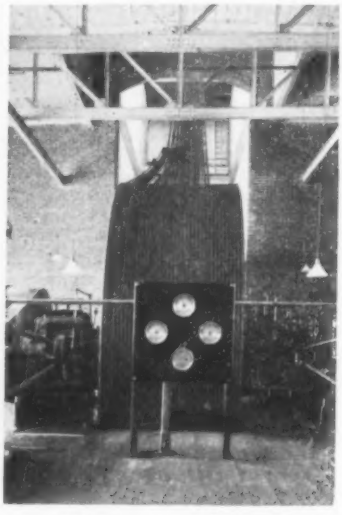
Langley Mills

TELEPHONE, TELEGRAPH OR WRITE US.

BIRD-WILCOX CO. INC. ATLANTA-CHATTANOOGA CHARLOTTE-SAVANNAH

TRANSMISSION ROPE

"The Best That's Made"



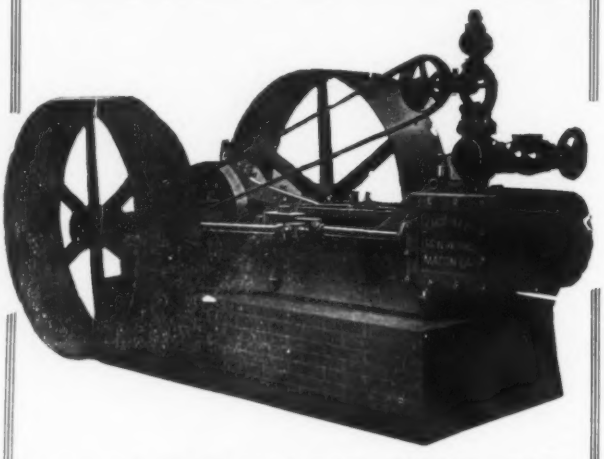
We want to figure with you before you buy transmission rope again. Fifty years of experience enable us to supply you "Quality" which means economy.

Write our Atlanta Office for Prices.

HENRY C. KELLY CO.

35-37-39 Worth St., NEW YORK

Healey Building, ATLANTA, GA.



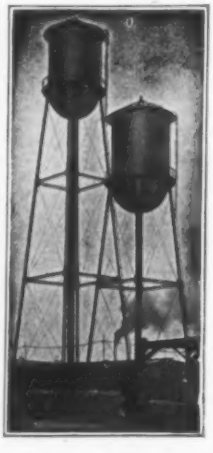
J. S. SCHOFIELD'S SONS CO.,
Macon, Georgia

MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Works.

TOWERS and TANKS
That are Built Right



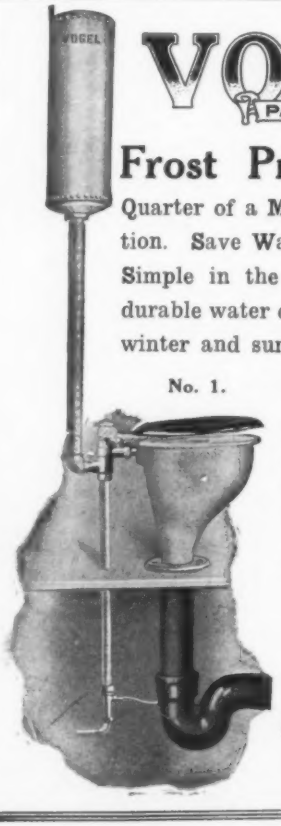
Boilers, Structural Steel Work

Sheet Steel and Plate Work

Boiler Tubes Castings, Etc.

Tell us what you want and let us quote prices.

The Walsh & Weidner Boiler Co.
Chattanooga, Tenn.



VOGEL
PATENTED

Frost Proof Closets

Quarter of a Million giving satisfaction. Save Water; Require No Pit; Simple in the extreme. The most durable water closet made. In service winter and summer.

No. 1.

Enameled roll flushing rim bowls.
Heavy brass valves.
Strong hardwood seat.
Galvanized tank.
Malleable seat castings will not break.
Tested under hydraulic pressure before leaving factory.

SOLD BY JOBBERS EVERYWHERE.

JOSEPH A. VOGEL CO.
WILMINGTON, DELAWARE

KEYSTONE FIBRE WAREHOUSE CAR

The Warehouse Car that "delivers the goods."

LIGHT—STRONG—DURABLE

Made of Keystone Fibre. Thoroughly seasoned.

Ultra strong for extra heavy work.

Your copy of our catalog is ready

Keystone Fibre Company

Box 42 Yorklyn, Delaware

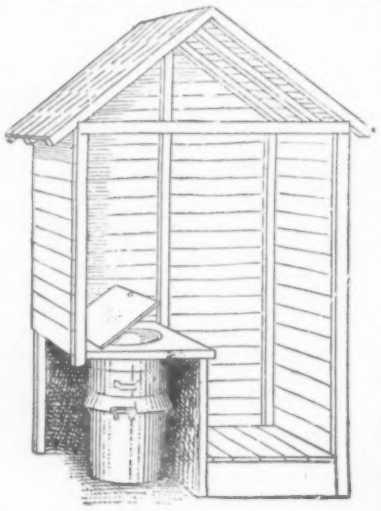
ANY OLD PRIVY MADE FLYPROOF--AND SANITARY PRICE $3.50 Each

No need for screens or "vaulting in" to make flyproof—No need for running water, plumbing, high priced fixtures or expert labor to install the

STEVENS SANITARY CLOSET CAN

AND IT GIVES YOU ALL YOU NEED IN A SURFACE CLOSET FOR LEAST COST

Metal construction—can't rot, go to staves, leak, crack, burst from freezing, or clog. Can be depended upon through heat, cold, rains or drouth. Is instantly installed and quickly removable for cleaning. Instantly replaced in exact position under seat, without the use of hooks, locks or vents to get damaged or require attention.



Extra deep upright receptacle makes it superior to shallow can or conical containers with slanting sides, and prevents contents from splashing out when removed for cleaning.

Patented sliding collar holds receptacle in position, catches all excreta, prevents soil and water pollution. Shows at a glance when can is properly replaced and fly proof.

Gives all the Privacy of the Sewered Closet for Only $3.50 per Closet

Don't be deprived of an adequate toilet system, don't squander time and money in high sounding, complicated, expensive systems and devices to improve your sanitary conditions.

INVEST TODAY IN STEVENS CANS

the efficient, the practical, the best by test, most economical device for the purpose on the market at anywhere near its price or ask for detailed information and answers to special questions NOW. Postal brings full information. Write us.

The Selig Co., Manufacturers
SELIG CO. OF TEXAS
Western Distributors
DALLAS, TEXAS.
Atlanta, Ga.

Lydia Mills, Clinton, S. C., bought five times, totaling 129 closets. These are not replacements but additions to equipment.

Fairmont Mfg. Co., Fairmont, S. C., bought 54 in June, 1917. They added 16 this year.

Springstein Mills, Chester, S. C. Tested with one May 24, 1916. One month later equipped village with 82. Added 18 this year.

Card Room Spindles Repaired

Worn or broken Spindles re-topped or re-versed—ELECTRICALLY WELDED, bearings made full size and tops made to fit your flyer.

Spindles guaranteed not to break at weld—Prices reasonable.

Southern Spindle & Flyer Co., Inc.
CHARLOTTE, N. C.

Manufacturers, Overhaulers and Repairers of Cotton Mill Machinery

W. H. Monty, Pres. & Treas.
W. H. Hutchins, Vice Pres. and Sec

J. LEON HOFFMAN

Landscape Architect and Engineer

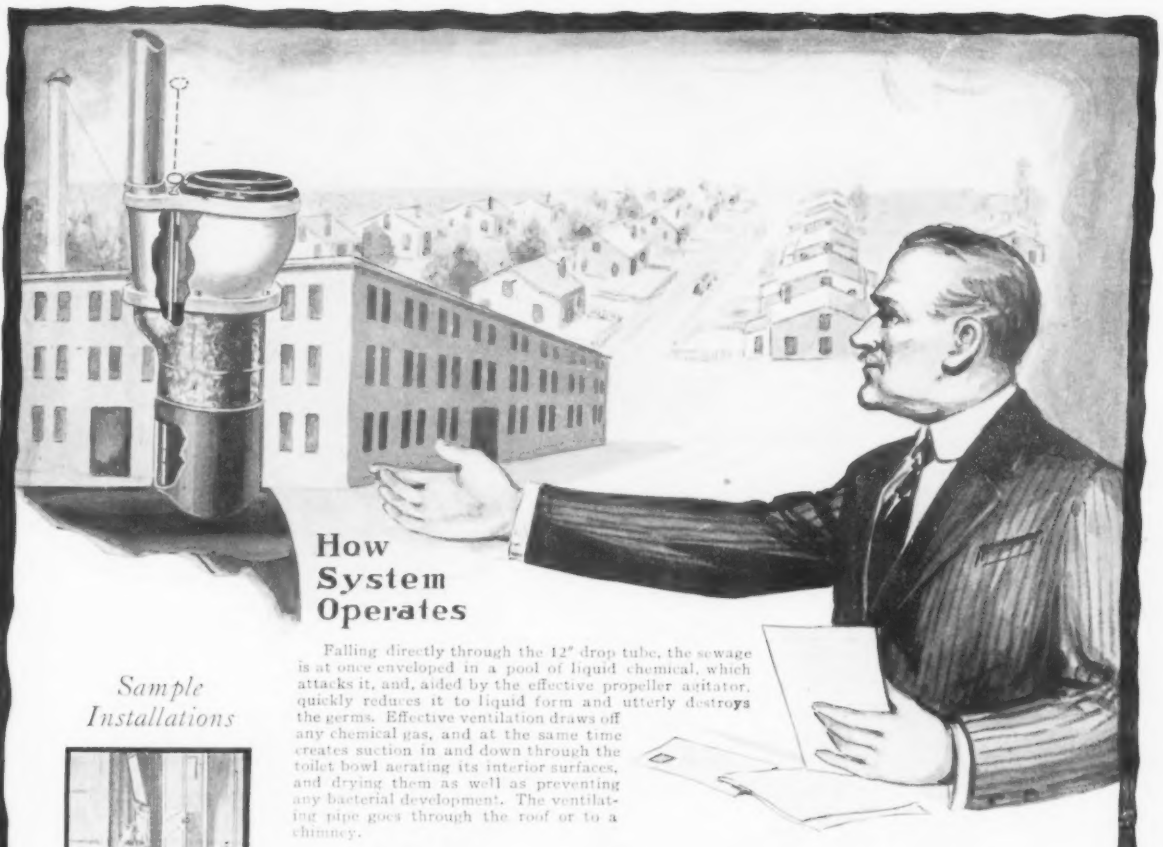
Industrial Villages a Specialty

References from some of the Largest Cotton Mills

103 Peachtree Street **Atlanta, Ga.**

GUMMED TAPE AND MOISTENING MACHINES
ESPECIALLY PREPARED FOR
SLASHER MACHINES
WRITE US FOR PRICES AND SAMPLES
ACME GUMMED PRODUCTS CO., 10-14 Tift Street, ATLANTA, GA.

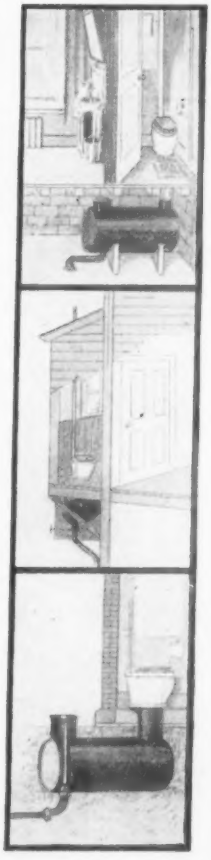
STENCILS FOR COTTON SHIPPERS, COTTON MILLS, MERCHANTS & MANUFACTURERS - ALSO BRUSHES, INK, MARKING POTS.
RUBBER STAMPS, NOTARIAL AND CORPORATION SEALS
ATLANTA RUBBER STAMP & STENCIL WORKS
OFFICE 33 LUCKIE ST. WORKS: 350 EDGEWOOD AVE.
P.O. BOX 834 OLDEST STENCIL AND STAMP HOUSE IN GEORGIA ATLANTA, GA.



How System Operates

Falling directly through the 12" drop tube, the sewage is at once enveloped in a pool of liquid chemical, which attacks it, and, aided by the effective propeller agitator, quickly reduces it to liquid form and utterly destroys the germs. Effective ventilation draws off any chemical gas, and at the same time creates suction in and down through the toilet bowl aerating its interior surfaces, and drying them as well as preventing any bacterial development. The ventilating pipe goes through the roof or to a chimney.

Sample Installations



Sanitation is Now a Simple Matter

Plans for sanitary improvements which will materially increase the efficiency of your mill workers and enhance the health-conditions of their homes can now be taken up with the Kaustine Company's Atlanta Sales Office. Mill owners throughout the South should avail themselves of this unusual opportunity. And working and living conditions will be improved by

Kaustine WATERLESS TOILETS

Kaustine sanitation in the mill, supplemented by Kaustine sanitation in the home colony, will do more than merely add to work-production among employes. It will develop loyalty by making employes happy and satisfied. Such provisions make for permanency of labor personnel. The problem of shifting [illegible] met and solved more easily.

Kaustine is an indoor toilet system, applicable in communities where lack of water and plumbing facilities make regular indoor toilets impossible.

The Kaustine System is simplicity itself—a practical idea, so perfected that it operates at negligible expense after installation. And its principle is so direct that it is proof against such difficulties as clogging, bursting pipes, or improper functioning.

Note, in the diagram and explanation above, the practical nature of the Kaustine System. Then apply it to your own problem.

And if you are interested, consult the Kaustine Company's Atlanta Office in person or by mail, regarding the ease of solving your problem. It is our pleasure to offer you the advantage of Free counsel. Our catalog alone should convince you of the merit of the Kaustine idea.

KAUSTINE COMPANY, Inc.

A. M. Whelpley, Sales Manager, 328 Candler Bldg., Atlanta.

What Would You Think of a Manufacturer—

—who wrote to you with a lead pencil—"We are saving much money because we do not use typewriters and telephones"? You might well wonder whether his merchandise was as much out of date as his business methods.

You know that modern time and labor saving appliances are not added expenses, but that they have superseded slower and more costly processes.

The concern which uses your business paper to tell you its business story is simply using a modern piece of selling machinery to make it easier for you to buy intelligently with the least waste of your time and theirs.

For the right kind of advertising shortens the distance between human minds just as certainly as the railroad shortens the distance between places. It is still possible to walk from New York to Chicago, and it is still possible for a business to get along without advertising, BUT—

—bear in mind that the seller who does not advertise does NOT save the cost of advertising, for it costs more to do the work of advertising by other means. Consistent advertisers are progressive merchandisers, and it pays to do business with them.

You are invited to consult us freely about Business Papers or Business Paper Advertising.

THE ASSOCIATED BUSINESS PAPERS, Inc.

The International Association of Trade and Technical Papers

Headquarters, 220 West 42nd Street, New York

National Builder
National Druggist
National Petroleum News
Nautical Gazette
Northwestern Druggist
Power
Power Boating
Power Plant Engineering
Price Current—Grain Reporter
Railway Age
Railway Electrical Engineer
Railway Maintenance Engineer
Railway Mechanical Engineer
Railway Signal Engineer
Retail Lumberman
Rubber Age
Shoe Findings
Shoe and Leather Reporter
Shoe Retailer
Southern Engineer
Southern Hardware & Implement Journal
Sporting Goods Dealer
Starchroom Laundry Journal
Tea and Coffee Trade Journal
Textile World Journal
Timberman
Transfer and Storage
Woodworker

LIST OF MEMBERS

Each has subscribed to and is maintaining the highest standards of practice in their editorial and advertising service.

Advertising and Selling
American Architect
American Blacksmith
American Exporter
American Funeral Director
American Hatter
American Machinist
American Paint Journal
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American Printer
American School Board Journal
Architectural Record
Automobile Dealer and Repairer
Automotive Industries
Boot and Shoe Recorder
Brick and Clay Record
Buildings & Building Management
Bulletin of Pharmacy
Canadian Grocer
Canadian Railway & Marine World
Candy and Ice Cream
Chemical and Metallurgical Engineering
Clothier and Furnisher
Coal Age
Coal Trade Journal
Concrete
COTTON
Daily Iron Trade & Metal Market Report
Domestic Engineering
Dry Goods Economist
Drygoodsman
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Electric Railway Journal
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Electrical Review
Electrical World
Embalmers' Monthly
Engineering World
Engineering and Mining Journal
Engineering News-Record
Factory
Farm Machinery—Farm Power
Foundry (The)
Furniture Manufacturer & Artisan
Furniture Merchants' Trade Journal
Gas Age
Gas Record
Grand Rapids Furniture Record
Haberdasher
Hardware Age
Heating & Ventilating Magazine
Hide and Leather
Hotel Monthly
Illustrated Milliner
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Industrial Arts Magazine
Inland Printer
Iron Age
Iron Trade Review
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Manufacturers' Record
Manufacturing Jeweler
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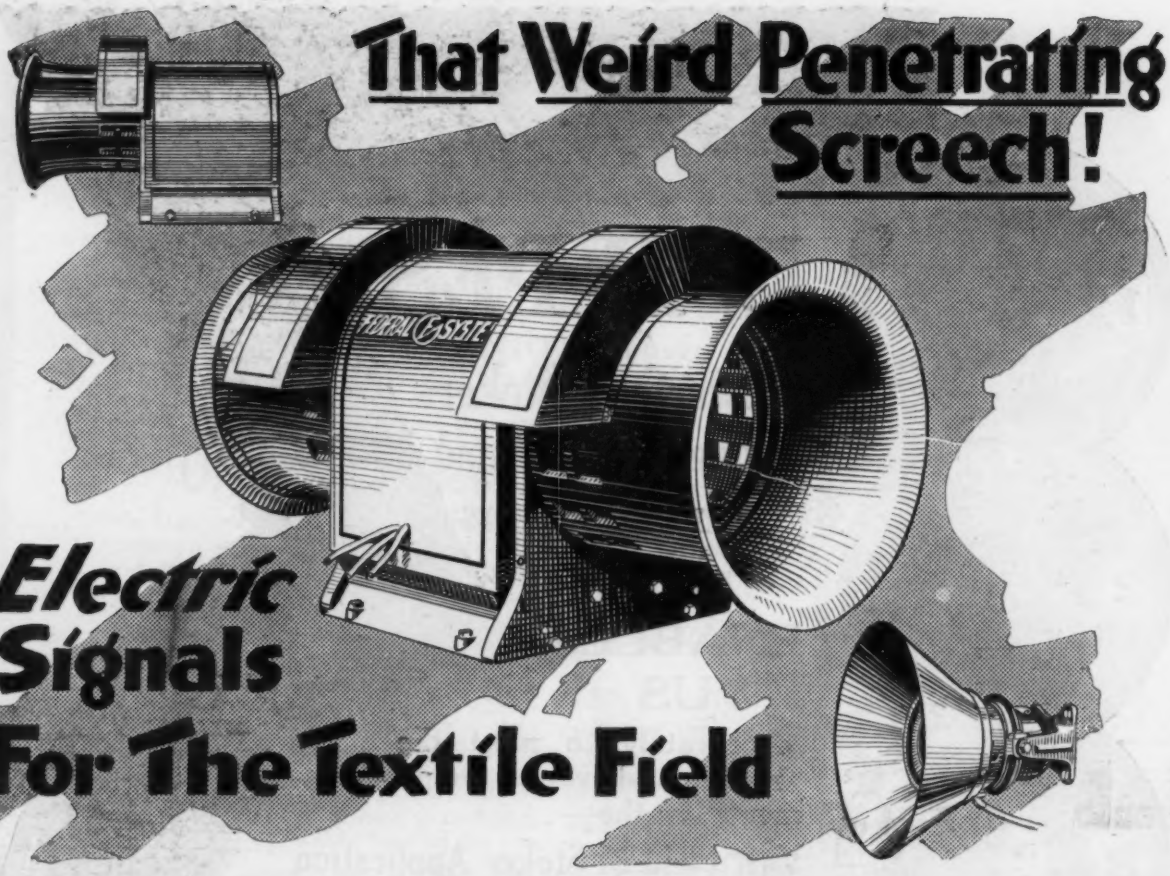
Marine Review
Metal Worker, Plumber & Steam Fitter
Mining and Scientific Press
Modern Hospital
Motor Age
Motorcycle & Bicycle Illustrated
Motor World



The FEDERAL ELECTRIC SIREN

is the ideal signal for the textile field, indoors or out.

Its unmistakable and commanding note is heard, clear and sharp, through the din of looms and spindles. The shriek of the Federal is never mistaken for any other signal. It reaches for miles around and is instantly recognized.

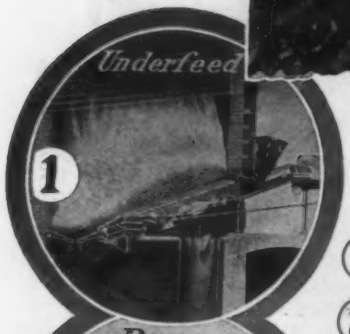
The Federal Siren is genuine protection for your employees and your property.

Several sizes and models for different purposes. Always ready for instant action at the touch of a button. As many switches as desired placed anywhere within quick reach. Only maintenance expense $2.00 a year for current.

Send coupon today for full particulars. You cannot afford to overlook this.

FEDERAL SIGN SYSTEM (Electric)
LAKE AND DESPLAINES STREETS, CHICAGO, ILLINOIS
Siren Department
Branches In All Large Cities

Federal Sign System (Electric)
Lake and Desplaines Streets, Chicago, Illinois.
Tell me all about the FEDERAL ELECTRIC SIREN for the textile field.
Name .....
Address .....
Company .....
.....
(C-5)



3 TYPES

① Underfeed Stokers
② Roney Stokers and
③ Chain Grate Stokers

THIS ENABLES US

Accurately to meet the many and varied requirements in the—

Vast Field of Stoker Application

—Many varieties of coal must be burned.

—The loads to be carried differ widely.

—Mother earth must be considered when foundation requirements come up.

—Headroom limitations often determine the type of boiler and stoker that can be installed.

—First cost is something always to be considered.

From the three types, a choice can be made to cover practically any requirement in stoker application. This also enables us more closely to meet your individual requirements. And further, after making recommendations based on a careful study of your plant conditions and requirements, we can confidently leave the choice of type to you.

Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pa.

We Can Leave the Choice of Type To You

Westinghouse

The Development of an Idea

Requires Time—Thought—Study—Experience

The first automobile was a crude piece of mechanism compared with the smooth running, high-powered motor car of today. The same is true of fuses.

We have been making "UNION" Fuses for THIRTY YEARS. Each year has contributed some improvement, either in construction, or design or both. Building step by step we have developed the

"UNION" Renewable Fuse

—a fuse which includes the *latest* development in fuse engineering yet has thirty years of fuse manufacturing and study of fuse requirements behind it.

Both mechanically and electrically the "UNION" RENEWABLE FUSE is superior. It stands for ***safety—dependability and low maintenance cost.***

The "UNION" RENEWABLE LINK blows without violence or viciousness — thus increasing the life of the casing—a highly important feature.

"UNION" RENEWABLE FUSES will reduce your fuse maintenance cost as compared with the use of any other renewable fuse on the market.

Chicago Fuse Mfg Co.

Renewable and Non-Renewable Fuses

Chicago New York

Be sure the trade-mark "UNION" is on every fuse you buy. Sold by electrical supply dealers everywhere.

Bad Lighting is a Serious Mill Disease

If you know definitely, or even suspect, that your lighting is under par, you are doing yourself a great injustice not to correct it promptly.

Bad lighting is a mill disease! It is no unusual thing for doctors to treat spines to cure ailments of the stomach and to fix teeth to relieve eye troubles. Therefore, there is nothing strange in our recommendation that you get your mill lighting promptly diagnosed and correctly treated in order to cure seemingly unrelated disorders such as lagging production, high manufacturing cost, excessive spoilage and the like.

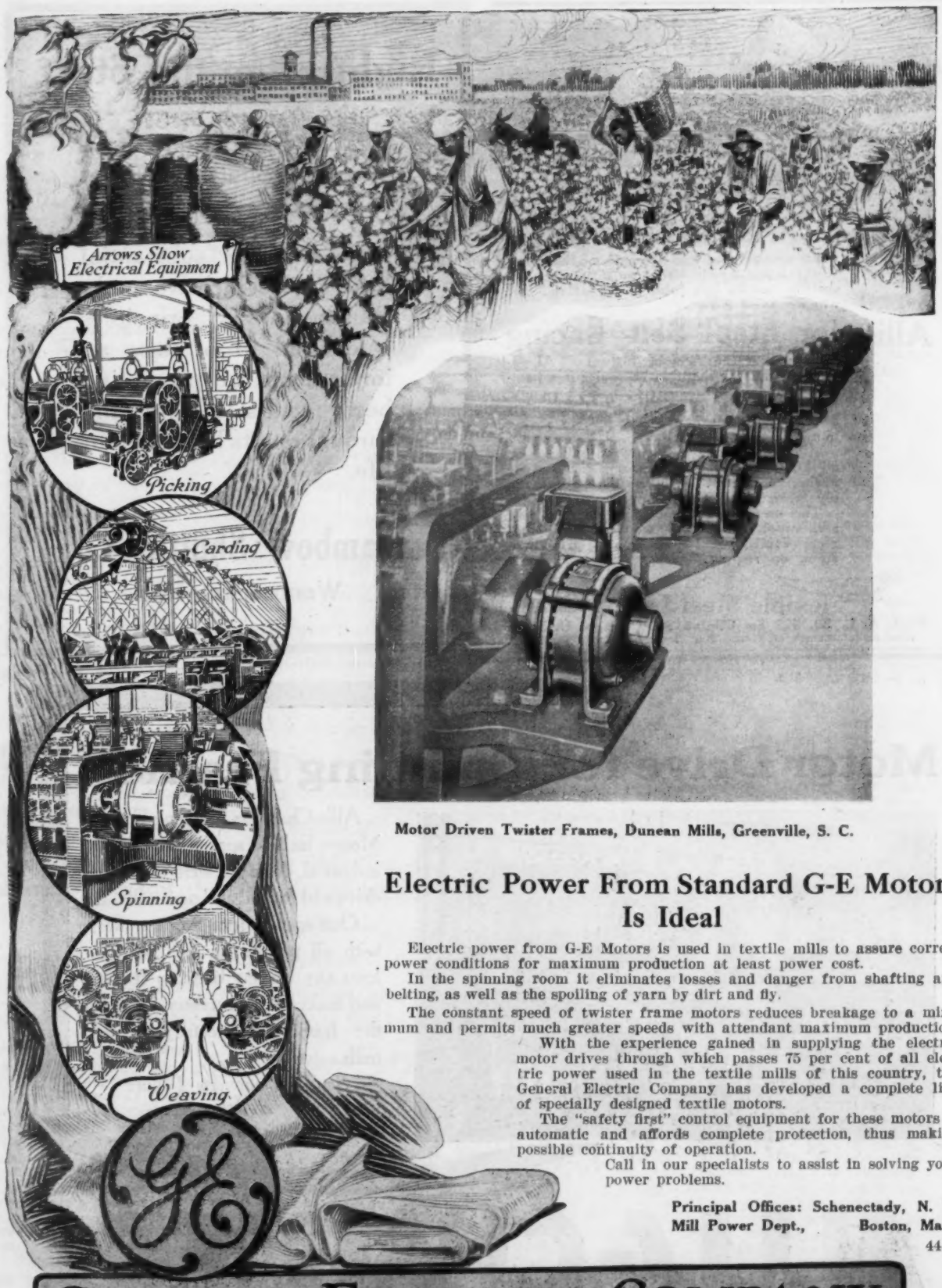
It is very *human* to put off the treatment until the disease becomes unbearable—but it is *very unwise* to wait until then. You will save both money and distress by tackling the job *before* you're forced to. We stand ready at any time to study your case—purely as doctors of lighting—and leave it to you to take or leave our recommendations. Why put it off *any* longer.

IVANHOE-REGENT WORKS
of General Electric Company
Cleveland, O.

"Ivanhoe" Steel Reflectors and Illuminating Glassware Plus Faithful Engineering Service.

"Service to Lamps"

IVANHOE
SHADES—REFLECTORS



Motor Driven Twister Frames, Dunean Mills, Greenville, S. C.

Electric Power From Standard G-E Motors Is Ideal

Electric power from G-E Motors is used in textile mills to assure correct power conditions for maximum production at least power cost.

In the spinning room it eliminates losses and danger from shafting and belting, as well as the spoiling of yarn by dirt and fly.

The constant speed of twister frame motors reduces breakage to a minimum and permits much greater speeds with attendant maximum production.

With the experience gained in supplying the electric motor drives through which passes 75 per cent of all electric power used in the textile mills of this country, the General Electric Company has developed a complete line of specially designed textile motors.

The "safety first" control equipment for these motors is automatic and affords complete protection, thus making possible continuity of operation.

Call in our specialists to assist in solving your power problems.

Principal Offices: Schenectady, N. Y.
Mill Power Dept., Boston, Mass.

44-7

GENERAL ELECTRIC COMPANY

BELT STRENGTH

is no greater than the strength of the joint. A three ton tensile strain on a six inch by six ply canvas belt joint is the official test which

Alligator Steel Belt Lacing

withstood at the Armour Institute. Alligator Steel Lacing requires no tool but a hammer and any workman can make a smooth joint in a few minutes. This speed, simplicity and strength means an appreciable saving in time, labor and money.

Alligator Lacing is a proved success on all kinds and sizes of transmission belts—From the lightest single leather to the ten ply fabric belting.

This unusual lacing may be obtained thru mill supply dealers or we will send complete descriptive literature and price list, direct on request.

Flexible Steel Lacing Co.,

Dept. A. L. 29, 522 So. Clinton St., Chicago, U. S. A.
Also manufacturers of Flexco and Flexco-Lok Lamp Guards.

Right From the Start

The foundation of a Shambow Shuttle is a Billet of Selected clear Wood.

This is the substantial base upon which we apply shuttle-making principles calculated to produce an implement for promoting best results in weaving throughout its long lease of life.

Shambow Shuttle Co.

Woonsocket, R. I.

Motor Drive for Spinning Frames

Allis-Chalmers Spinning Frame Motors include special motors for industrial drive as well as group drive and for old and new mills.

Our special four-frame motor, with all pulleys on one end, allows any spacing between frames and makes it unnecessary to move the frames in electrifying old mills.

Send for our new Textile Bulletin.

ALLIS-CHALMERS

Milwaukee. Wis. U.S.A.

COTTON

Published Monthly by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor.

Editorial and Advertising Departments, Grant Building, Atlanta, Ga. Subscription price, $1.00 per year; Canada, $1.50 a year; Foreign, $2.00 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The names of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

Member Associated Business Papers, Inc.

Member Audit Bureau of Circulation.

This Issue 5500 Copies.

Volume 83. Number 7.

THE WAR AND SALESMEN.

A business authority stated that 17½ per cent of the traveling salesmen in the United States joined the military forces.

Only a part of these men have returned. There is a great dearth of salesmen. How is this condition to be met?

Let advertising do a large part of the work formerly done by men. Let advertising do the introducing so that a man need not spend hours of his time each day explaining why and what the manufacturing company he represents is and what they are doing.

This is being done by thousands of companies. The result is that salesmen are traveling faster, calling on more prospects, getting more business than they ever did before and with less effort and in shorter time.

COTTON can surely help you in the cotton manufacturing field.

AN ADVERTISER COMPLAINS.

Last week one of our oldest advertisers was mailed a tip. The answer came back that on account of the good work that his publicity in COTTON was doing he was so far behind in his orders that he could not fill the requirements.

Did he cancel his advertisement? No, he did not. It is running right along as usual. He is preparing for the time when orders will not be so plentiful. He is building the cumulative effect of advertising. He believes that the man who keeps everlastingly at it will be on top during dull times and rush times.

COTTON is working for him and will continue to work for him. COTTON will help you just as it is helping him.

Thrift is a national duty. Practice it by saving selling expense. Save by advertising.

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ADVERTISING AND MARING POSSIBILITIES.

Much advertising is wasted and waste is criminal. The reason for this is that too many manufacturers do not fully investigate the possibilities of the fields that "look good when they are far away."

On the other hand too many manufacturers neglect opportunities by not investigating fields with which they are not familiar.

Only recently a big manufacturer was approached by a salesman in regard to a field which they had not considered. It was with difficulty that the salesman secured an interview.

It is too early to report returns, but it is safe to say that they will be big.

Salesmen for COTTON never approach a manufacturer without knowing what they are talking about. If there is any question an investigation immediately is started to get the facts and these facts are laid before the prospect in their true light.

DON'T NEED TO ADVERTISE! MAYBE.

Maybe you think you don't need to advertise, but if you sell things to textile mills you do need to advertise. Sometime ago a dealer in wiping cloths to be used around machinery was approached and urged to use the publicity service of COTTON. The answer was we are reaching the field and do not need to advertise.

This morning we received a letter from a $500,000 corporation asking where wiping clothes could be obtained. This letter was signed by the treasurer of the company.

The moral is too plain to need pointing out. Use the publicity service of COTTON if you have anything to sell that can be used by the cotton textile industry.

Give visiting salesmen the same courtesy you would like your men to receive.

HEAVY GEARS NEED A "REAL" GREASE

It takes an unusual grease to lubricate heavy gears properly—an extraordinary grease—like Dixon's Waterproof Graphite Grease.

Pinions can't throw this grease off—no matter how they jump. It is never wasted by dripping either. Yet there's nothing about it that makes it sticky or gummy. It has just the right body to stay where it is put—and to lubricate for the longest possible time.

The selected flake graphite used in this grease is what makes it such a fine economical lubricant.

You will find it highly satisfactory for heavy gears, pump plungers, elevator plungers, piston rods, etc.

For further facts write for Booklet No. 34-W.

Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE COMPANY

Established 1827.

SETTEES

AND SWINGS FOR PLAYGROUNDS and PARKS

LOW PRICES QUICK SHIPMENTS

We also manufacture Wire and Iron Window Guards, Stall Guards, Hay Racks, Oat Mangers, Etc.

DOW WIRE & IRON WORKS
INCORPORATED
LOUISVILLE, KY.

JORDAN MANUFACTURING CO.

BOBBIN MAKERS

Home Office and Plant No. 1
MONTICELLO, GEORGIA.

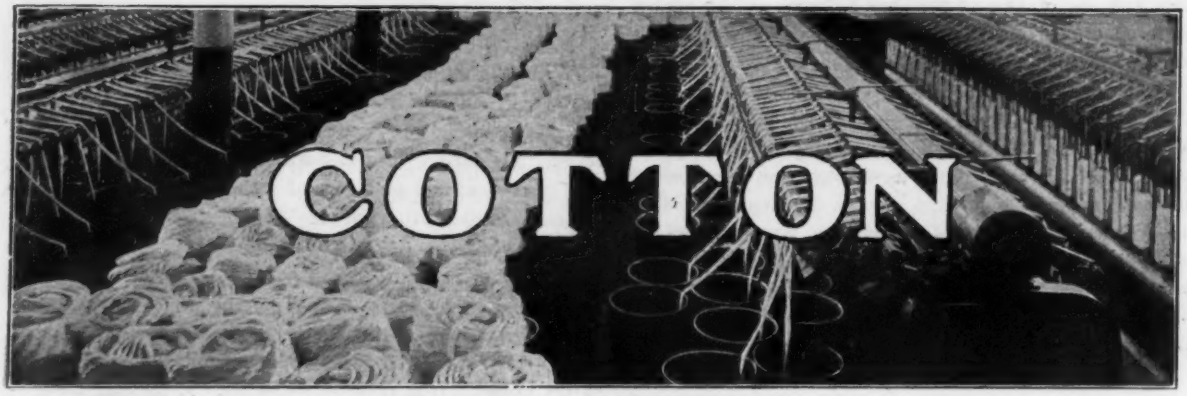
GARLAND

LOOM HARNESSES

Have the eyes well opened and in their construction are so treated that the eyes retain their shape until the harness is worn out. Uniformity in the size and shape of the eyes, their perfect alignment and freedom from twist make them ideal for machine drawing.

TRADE MARK

GARLAND MFG. CO.
SACO, MAINE



May, Nineteen-Nineteen

Getting Back to Brass Tacks.

The mills of the country have been through the most strenuous production period in their history. The demands of war called for greater quantities of cotton goods than the manufacturers dreamed it were possible to produce with the equipment on hand. But government orders were imperative. The armies had to be equipped. Machinery was placed on day and night runs. Many new and untrained operatives were employed. Bonuses for quantity production and steady attendance at work were paid. Wages were advanced in order to attract additional workers. Costs of all kinds were not considered, were not even thought of in the frenzied endeavor to supply the fighters.

But the war is over. Prices for textiles have decreased. Government orders for the most part have been canceled and civilian orders at the present are not sufficient to keep the mills normally occupied. The high living costs brought on by war conditions are still with us, therefore labor costs have not been diminished. The cotton planter still has his wagon hitched to a star. And the jobbing trade is waiting for manufacturers to fill mill warehouses with stock goods in their effort to keep mill organizations intact. It looks to the jobbers like a nice, juicy plum that is slowly ripening and that will eventually drop. Are they right?

Certain it is that a mill producing on orders only is in a much more independent condition than another mill with large quantities of goods stored that cost a high price to manufacture. It is for this reason that the wise cotton mill manager is curtailing his production by running reduced hours, thereby making his product and his orders balance.

This however, is not the only big problem facing the cotton manufacturer. A well known Georgia mill man recently expressed it as his opinion that the biggest job the cotton manufacturers face today is in getting the mill poundage costs back on a normal basis. Everyone connected with the mills, from the manager to the sweeper boy has become accustomed to frenzied production regardless of quality and cost. Quality must be had, as buyers on a peace-time market are more particular than were the war-time buyers of a few months ago. In those days if the government inspector turned down a lot of goods, civilian buyers were on the job clamoring for a chance to purchase.

The problem now is to get the mill organization, and this includes all classes of overseers and operatives, back on a production basis that will not only give quantity and quality, but will also conserve the cost. There was a time when a mill manager would tear down and readjust half the machinery in his mill in an effort to better the poundage cost an eighth of a cent because some neighboring mill making the same class of goods was beating his production costs by that amount.

A partial solution to the problem is to reduce the payroll or labor costs by the more general use of automatic machinery and labor saving appliances. This is a question worthy of careful study on the part of the manager and his immediate assistants. The balance of the problem involves the human equation and thus calls for co-operative work from everyone in the mill. This needs competent leadership and a careful handling of local conditions. These are complex problems that demand immediate action.

Let's go from here!

Industrial Education Gaining Recognition.

Vocational education for textile workers under the Smith-Hughes Act is rapidly gaining recognition among Southern mills. Since the educational conference called at Atlanta in August of last year by the Federal Board for Vocational Education, fifty-four separately organized classes have been reported and in many instances very satisfactory progress has been made.

The experiences of the educators thus far seem to lean strongly toward unit courses of study. The average student seeming to take greater interest in one particular item of mill work. An example of this method of instruction that may be cited is at a North Carolina mill where a school for loom fixers was organized.

The first meeting of the men was simply a preliminary meeting, at which the mill manager outlined at length the things he hoped to accomplish, also the outline of the work that would be covered and the manner in which the overseers would attempt to cover it. It was a very interested crowd of men, and the two sets of practical lessons that have been given during the intervening period have been received by the men enthusiastically, and from every indication it looks as if the course is going to be a decided success.

The overseers of weaving, the assistant superintendents and one or two of the second foremen have agreed to teach certain branches of loom fixing, on which they are especially expert.

In order to accommodate everyone interested it was decided to have the same lesson given two nights during the same week, and Monday and Wednesday nights were selected. Monday night is the most convenient for most of the men, although they have about a dozen in attendance on Wednesday nights, and it has been found among the newer men that sometimes when they do not catch all of the points covered on Monday night they will come again on Wednesday night and go over the same ground the second time.

In addition to this school, this mill manager has also started a scheme of teaching in all of their weave and spinning rooms. After carefully selecting the proper persons for the work in these rooms he gives these teachers about half the amount of work that they are capable of keeping up ordinarily and they devote the balance of the time to carefully showing the new operatives assigned to them how to do the work properly. He, of course, pays these teachers as much, or in fact slightly more for doing this work than they were able to make before. The results he is getting from this system are very gratifying and he confidently believes that satisfactory operatives can be developed in this way within half of the time, or possibly one-third of the time that they can be if placed with weavers or spinners with a full job on their hands, and no special incentive to properly teach the inexperienced ones.

This is a practical illustration of some of the methods being adopted and the results in prospect at this early stage in textile vocational instruction.

Art in Cotton Cloth Design.

As in many other fields of artistic endeavor, the artistic textile designer for cotton goods has not received the appreciation which is frequently his due. All too frequently the designer finds he must not only bring out the necessary pattern to suit the desires of the selling office, but that he must also attend to other routine work in the establishment where he is employed that may be more or less intimately connected with his job of designing—usually less.

These actual practical facts are illuminated somewhat by the article appearing upon another page entitled "A Little Talk About Design." The author has handled his text well and his plea to cotton manufacturers is not only to support designers who are now working along original lines, but also to urge upon designers in their employ the need for more original work, at the same time granting them the necessary time and reward to make such effort really worth while. Unquestionably this plea for better art in textiles is worthy of the careful consideration not only of individual cotton manufacturers, but also of cotton manufacturers' associations. May we not hope for the designers of the future a more earnest and comprehensive support in their efforts to produce real art in the make up of cotton textile designs?

Work For Yourself.

Make 1919 a year of thoughtful saving!!

With this ultimate object in view, the newly-organized Savings Division of the United States Treasury Department has launched an intensive campaign to stimulate, or better, "popularize," habits of wise buying, sane saving, secure investment and avoidance of waste, in connection with the sale of the 1919 issue of War Savings Stamps and Thrift Stamps.

During the war, a penchant for economy—of food, fuel, money, and time—was developed by the American people. The Government now declares this war-taught lesson should not be cast aside in the reaction which follows the signing of the armistice. It must be continued. It must be made a permanent and "happy" habit.

The immediate and concrete objective of the campaign is to encourage the public to continue buying War Savings Stamps and Thrift Stamps and thus apply funds for meeting Government obligations incurred during the war, and arising since the cessation of hostilities. It is essential to a sound economic program that smaller savings, as well as larger capital, finance Government operations.

In connection with the savings stamp campaign, comes the Government's educational campaign to stimulate wise buying, sane saving and safe investment. Sane spending is the basis of intelligent saving and elimination of waste, whether of commodity or time. In making purchases, the buyer should make certain that he gets his money's worth in commodity, comfort, service, recreation or advancement. In essence, it is a sort of budget making.

Provision must be made for the rainy day and unforseen emergencies—or opportunities—when they occur. Intelligent saving is diametrically opposed to hoarding or miserliness.

With War Savings Stamps an absolutely solid and attractive investment, and as the most effective mechanism for saving small sums regularly, the United States Treasury Department naturally recommends this form of intelligent saving.

The name of Benjamin Franklin, apostle of saving, whose sound economic doctrines form the basis of true thrift, is to be the watchword of the savings campaign. The government has paid signal tribute to his memory in placing his picture on the 1919 issue of War Savings Stamps. And the likeness of Franklin also occupies the place of honor on the official 1919 insignia of the thrift campaign.

During a severe thunderstorm lightning struck the wires furnishing power to a cotton mill. The fuses on the line were located in a metal cabinet on the wall, the electric meter being directly below. It was the custom, when the factory ceased operation, to throw off the current at the machines, but to leave the main switch closed. The plant was not in operation when the fire occurred, and the lightning passed through the main switch to the meter, which was destroyed, sparks from it falling onto cotton on the floor. The damage amounted to $1,468. If the main switch had been opened when the plant shut down the loss would have been slight, if any.

A Little Talk About Design

BY BURTON H. ALLBEE.

All fabrics are made or ruined by design. A pure white fabric is beautiful and will sell at any time. So will any other plain color. But unless the designs placed upon them when they are printed are suitable and please consumers they will not sell. Plain fabrics are not difficult to dispose of. Some designs can never be sold.

Purchasers of fabrics know nothing about the technique of design. They have no knowledge of how a design is prepared and applied and they care less, in a majority of instances. But they do know whether a design pleases them and they will not buy unless it does. In truth, any manufacturer can tell each season of a few numbers out of his offerings for that season which have not sold, largely because the combination of colorings which form the design did not please.

It is useless to ask why. Certain combinations are refused each season, yet seldom are the same designs refused two seasons in succession. It is usually one sort of design one season and another the next. But the psychological influence which causes customers to reject one design and accept another can hardly be understood. But it is sufficiently powerful in its action to lose much money for manufacturers and converters who make wrong selections.

Another feature of this interesting question is the fact that sometimes if fabrics carrying a certain design are refused one season, and then are laid away for a season or two, they will sell when brought out again. Taste seems to change from season to season, one variety of design selling well one season and another the next.

Of course these are all more or less trite observations, since manufacturers and converters are familiar with such manifestations of what they might reasonably feel is poor taste on the part of the buying public. They lose enough money by the fickleness of this taste to entitle them to make critical observations if they feel as though that would relieve the situation any. However, it won't, and perhaps the better way is to accept the manifestation of these peculiarities philosophically and let it go. No one can change it; neither can anyone always guess right.

Sometimes one almost feels as though designers are not quite as progressive as they should be. That is, they are not always ready to accept the impulses that would influence them to make different designs. They, like others, are more disposed to run in grooves. It is easier and perhaps the successes are almost as numerous in grooves as out of them. That is, a designer may, perhaps, develop a certain individuality which is noticeable all through his work. This individuality may please a large number of converters or manufacturers and their belief in him may be translated into liberal sales. It is only natural that he should want to continue doing the same things. It is the expression of his own personality and might be, for all one can say, as artistic as some other style or type.

But influences are always abroad which may change the taste of the buying public. That is, the situation may change over night and unless the designer is receptive enough to seize upon these changes and immediately translate them into something the public likes he may lose an opportunity to make a striking success. Not all designers can do this, and frequently a converter's line suffers because he can't.

Observations like this do not apply to all, but they do apply to some, and perhaps it is not going too far to say that they apply to far too many. Ability to seize upon the varying moods of the people and make them into acceptable designs may be said to be quite as essential as it is to seize upon their moods in other directions. The designer is an artist and no other artist could exist unless he could do this.

Generally speaking, designers are eventually more or less influenced by the sentiment and mood of the people with whom they are surrounded. For example, during the early days of the war designers brought out designs which had all the appearance of a bursting shell. Perhaps the designers did not intend to do anything of that sort, but they correctly interpreted the explosive character of the feelings of the public and the result was a series of designs that suggested war, even though nothing relating to war was actually illustrated. Later came a series of victory designs in which warlike symbols and historic persons and places were used as a basis. They were all popular, though in time the explosive idea became almost unbearable in its vindictive suggestiveness and the public ceased to buy. Many thousands of yards of cloth had to be returned to converters and refinished. It was quite impossible to sell it with the warlike designs upon it.

That changed and in place of it came the more quiet design, the one that really suggested mourning. The designer finally caught the spirit of those who mourn and his product could not divorce itself from the general sentiment. The deepening feelings of the public were accurately interpreted and designs took on the somber cast which presages mourning. Not all, it is true, but some. Colorings were deepened and the combinations were such as to suggest grief, yes, gloom, in some instances. The people bought because that was the way they felt and the designs expressed their own sentiments far more accurately than they could have done it themselves.

The war ended and many hundreds of thousands of yards were colored and decorated with these gloom suggesting combinations. They would not sell, and once again more or less refinishing was necessary to make the merchandise salable. Some of it never could be made salable and it has gone to make refugees more comfortable, on the theory that they won't mind. Yet, if the sentiment of the design can communicate itself to the person wearing the garment it would seem as though unfortunate refugees are afflicted more than their share.

The armistice was signed and a new era began in the world. Designers did not at first grasp the significance of the event and the new designs by no means reflected the sentiment which swept over the world after the armistice.

Not always was it as those who think most of progress would like to see, but at least it was an attempt to free themselves from tyranny which has cursed the world, or some of it, for ages. And in this outburst of a new hope was an opportunity for designers which few have yet accepted. A series from the hand of one of the leaders was seen not long ago and the figures are nearly all conventional and some so small that at a little distance they blend together in a solid color. Not an indication of the great wonder that has come to the world. Not a sign of the inspiration which should have spread itself abroad when it was known that the world was breaking away from old and outworn dogmas and addressing itself to new creeds. Something as yet untried, but fraught with such wonderful possibilities that the artist should have been profoundly influenced by the marvel of it. Designers have not yet caught that note. At least, in no designs yet seen since the armistice was signed has the new world aspiration shown its influence. The same meaningless, almost dull figures and colorings are the only ones yet seen.

Perhaps the results of this inspiration are to come later. But it would seem as though they will be of little value unless they are seized now and translated into something which will appeal to purchasers of fabrics. It is difficult, perhaps, to accomplish this, yet all work worth while is difficult, designing quite as much so as any other. And the designer needs the results of hard work quite as much as any other.

Designing for fabrics may be divided into two schools at present. The old school which clings uncompromisingly to former methods and ideas and refuses to accept anything new. They are still reproducing the ideas which have served for years, perhaps, and are wondering why they are unable to make headway. They can see nothing but the same conventional types which have served them for no one knows how long, and they are so wedded to these ideas and their development that they refuse to see merit in any other.

The other school quite as uncompromisingly rejects all the old ideas and boldly launches out with quite a different method. It takes new ideas or, more correctly speaking, it goes to museums and art collections and takes what it finds there, adapting them to modern requirements. Some are distinctly Cubist and Futuristic in their development, but they point to them and declare that here is something new. In its crude state it is even worse than the dullness of the old idea, and one sometimes wonders what it will do eventually. Whether it will go forward and ultimately develop into a new textile art, or whether it will have its little day and disappear beneath the oblivion of neglect and lack of interest.

If in some way the two schools could come together and allow the influence of those who love the new and unconventional to somehow permeate the work of those who adhere so closely to the old and conventional, out of the combination might be developed something which would be a textile art, in harmony with the sentiment of the time, and therefore so expressive that its satisfactory distribuion would not be a question. Some may, if they are fortunate, pursue art, even the art of designing, for its own sake; but unfortunately most designers will be forced to depend upon the results of their efforts for securing a livelihood and they will have to be opportunists, to the extent that they must design something which will sell.

Some are making a new textile art, as their work shows, but the number is far too few. It is to be hoped that those brave ones who are traveling the path that leads to progress, more or less alone, will ultimately arrive at the goal. For there lies something which will bring a new beauty and a new sentiment into textile designing.

He who slavishly worships at the feet of some designer of the past, or he who refuses to accept anything from the past and undertakes to build up his own, will alike fail in the manifestation of what is best in textile art. It is only by taking inspiration from all sources, accepting the cosmopolitan influences which should, and probably do, flow from every direction, that a designer can hope to make his work sufficiently virile to be worth while.

Maybe those who buy designs are somewhat at fault. Instead of rewarding the successful designs as other works of art are rewarded the designer may get $25.00 for his skill. If the manufacturer was to turn out cloth at a price which he felt was below its real value he would not care how he made it. If you doubt this examine a cloth which is made to sell at a low price. If the manufacturer, who does his work mechanically and largely by directing a machine, allows his quality to deteriorate because the returns are likely to be small, shall a designer be condemned for doing exactly the same thing? Perhaps the two cases are not parallel, but the unfortunate fact in connection herewith is that both are produced by men and men are, after all, quite likely to be swayed by those influences which usually move men for good or ill. More money for the good designs and a surer recognition of the designer whose work possesses the indefinable something which may be defined as artistic sensibility, will go far toward changing the situation.

Have designers progressed during the past few years? That is a hard question to answer. But in going over some old books of samples made from twenty to forty years ago, designs were found that surpass anything brought out in recent days. This is not saying that all the designs of that time were equally satisfactory. It is saying, however, that considering the number of designs offered those which were really good outnumbered the others. True, the number was smaller than now, and perhaps it is unfair to make comparisons. But it will have to be admitted that improvement is not as marked in the designs as it is in the mechanical department of textile production. What is done by machinery has improved with the development of the machines. But designers have not kept pace with the development of machinery. Or, if they have, they have not manifested it in the bulk of their work.

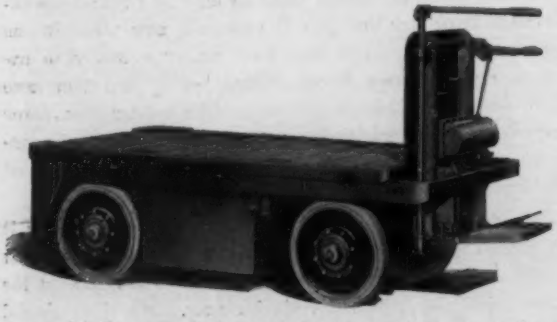
Whether the rewards have been greater for the machinery builder, or whether designers felt that a large amount of mediocre work was quite as likely to bring profits as a smaller quantity of worth while work, it is impossible to say. Perhaps to merely point out the fact is sufficient. The matter cannot be successfully ignored. Designers, as a whole, have evidently failed to catch their opportunity and have, so it would seem, failed to develop as the machine builder has developed.

(*Continued on page* 382.)

A Solution for COTTON MILL TRUCKING PROBLEMS

Among the exhibitors at this year's Southern Textile Exposition, which will be held in Greenville, S. C., from May 5th to 10th, will be the Baker R. & L. Company, of Cleveland, Ohio, who are well known as manufacturers of BRL industrial trucks and tractors, Raulang electrics and Owen magnetic motor cars. They will show some typical vehicles from the industrial truck and tractor line, and the exhibit will doubtless be of considerable interest to all textile manufacturers and warehouse men who are faced by labor and haulage problems in their plants.

The electric industrial truck is a very recent development and was made necessary by the growing demand for improved methods of industrial transportation and factory production. The Baker R. & L. Company, who are pio-



neers in the manufacture of electric vehicles, have developed the Baker System of industrial transportation to meet all industrial needs consisting of the following types:

Tractor, a vehicle of the locomotive type which carries no load itself, but is used exclusively for hauling trailers or similar duty.

Utility truck, a 4,000-pound self-propelled truck.

Elevating truck, similar to the utility truck, but equipped with a low platform which may be elevated or lowered, thereby making it self-loading and self-unloading.

Crane truck, a self-propelled vehicle with a power-operated crane attached. Several types of crane are furnished depending upon the particular duty required.

Special adaptations of basic types—such as dump body truck, etc.

Each of the foregoing types has its own particular uses and before recommending a purchase the Baker R. & L. engineers study the needs of the prospective customer, since it is a rule with the company to sell a man only the vehicle which he needs, and if the investigation shows that it would be uneconomical to purchase a truck he is frankly told so.

In plants where the electric tractor is used the trailers are loaded and left where the tractor can pick them up. They are coupled into trains and hauled away to be distributed in distant parts of the plant. This miniature

train has a brakeman who attends to coupling and uncoupling the cars and the driver does nothing more than to look after his tractor.

The utility truck is in effect a 4,000-pound electric driven motor truck reduced in size so that it can negotiate the narrow aisles and runways common to the average plant. It can carry a heavier load and much more rapidly than can be handled by the hand trucking methods, and the operation of the truck is so simple and safe that the drivers soon become expert. The utility truck is also built in a special low platform type.

The elevating truck is designed so that it may be driven underneath a load set up on skids; the switch operating

the elevating mechanism is then closed and the machine automatically picks up the load, when the driver whisks it rapidly away to its destination where the elevating mechanism is reversed and unloads the material. This system is probably the more common and can be used to advantage in many shops, warehouses, docks, etc. In order that it may be used to the best advantage a large number of loading platforms are built with skids attached. A crew of men at the loading end place the boxes, sacks or bulk material on the platform and another crew at the unloading end take the material from the platform. The truck is thus kept constantly running and the greatest return is received from the investment.

Crane trucks of several kinds are used for various types of duty. Two special crane trucks, designed particularly for the government, were used for picking up and carrying shells and stacking the shells respectively. Another type

of crane (which will be shown at Greenville) is used for loading the truck to which it is attached.

These industrial trucks are driven by a powerful electric motor with power furnished by storage batteries at small expense. In fact every installation has shown a material reduction over any other method of hauling. The batteries have sufficient capacity to drive the truck under normal conditions during an entire working day. If particularly heavy duty is required of the truck, it can be put on charge while the operator is having his lunch and be ready to finish out the day when he has finished.

The Baker R. & L. people predict a great future for the electric industrial truck. Already the sales are mounting and as manufacturers become more familiar with this type of vehicle and the demand for labor saving devices increases, it is expected that the use will become even more universal.

A Little Talk About Design.

(*Continued from page* 380.)

Cotton converters have been accused of waiting until silk manufacturers produce their designs and then copy them in cotton. Prominent silk manufacturers say that they will bring out something which is new and which seems to them worth while, but before they can distribute it to the trade it is reproduced in cotton and sold at a fraction of what they must get for it. Many buy the cotton because it costs less who might buy the silk if they knew that the design could only be obtained in silk. Others will not buy silk at all after they learn they can get the design in lower priced cotton.

The truth of this phase of converting is vouched for by a number of leading men. They say, however, that the practice is less common than it was and that they believe eventually it will disappear, but it does inflict damage upon the original producer of the design now and it causes severe losses to the man who has brought out a silk fabric with something new and effective in the design. The practice should not be condoned and where it does exist should be stopped. Cotton men are quite able to provide their own designs and it surely is no honor to the trade when one is copied and reproduced to be sold in competition with a higher priced fabric. Some cotton men in the New York market have considered this method of doing business more or less of a joke and have openly said that they were awaiting the new silk designs before they decided what to use themselves. Such methods are not to be tolerated. Moreover, as a rule the silk design is by no means suited to reproduction in cotton, and the fabric would be much more successful if it was decorated with designs made especially for it.

A few designers are working hard along original lines. They say that they are doing their work as best they can, that it is their own expression and interpretation. They ask that it be accepted as such and judged upon its merits. They hope to see more of this character of work done in the future.

These pioneers are to be commended. Upon what they do may rest the development of textile art in this country for years to come. What they do may so profoundly influence textile art that it will assume a new place in the galaxy of arts. Cotton men have an opportunity to encourage such art as never existed before and they owe it to their great industry to exert their influence in favor of men who are working alone, without much encouragement and with the hope of future growth as their most influential impulse at present.

Cotton is the great fabric of the masses and clearly it is worth while for the cotton manufacturer to do what he can to make cotton textile art at least as good as the mechanical department of his business. Machines should not be permitted to triumph over men.

Owing to the demands of a constantly expanding dyestuff business, the National Aniline & Chemical Company, Inc., has arranged to erect a four-story office building at Nos. 15-17-19 Burling Slip, directly adjoining, and to the west of, their present New York office building, at No. 21 Burling Slip. The present structure, a ten-story building devoted to the sales and executive offices of the company, will be continued as such. Until the new addition is ready for occupancy, the drug, chemical and special products departments will occupy the third floor at No. 28 Burling Slip.

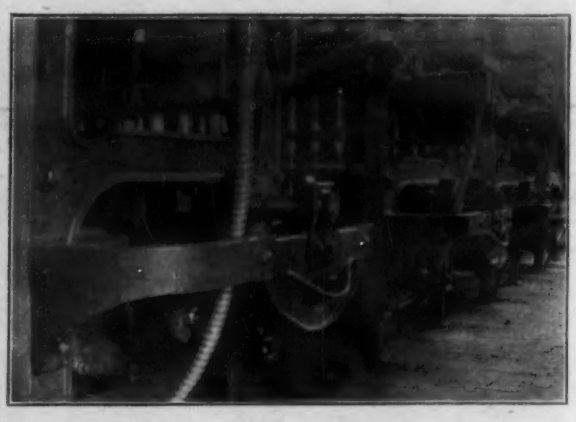
The Corley Spinning Frame Drive

The Corley spinning frame drive, which is shown in the accompanying illustrations, is an entirely new device insofar as spinning frames are concerned. The plan originated and was developed by Clifton Corley, General Manager of the Necronsett Mills, at Cumberland, N. C., which was the first mill equipped with these devices and in which the accompanying illustrations were made. There is little doubt that it will prove very popular with the cotton

A CLOSE UP VIEW OF THE DRIVE.

mill managers because of its various and very noticeable advantages.

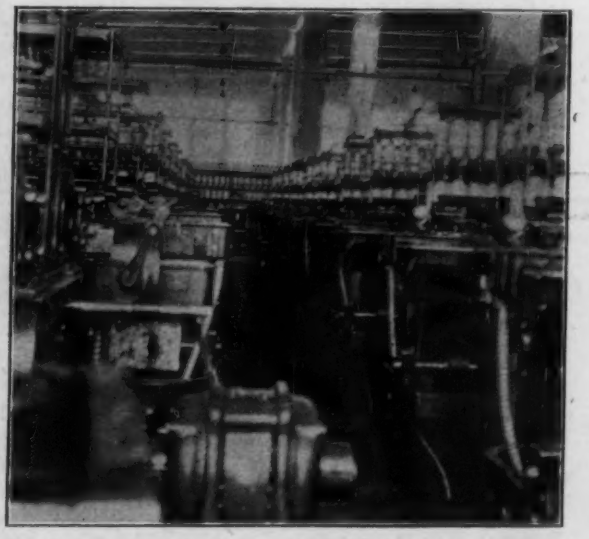
These advantages are obvious from the illustrations, although it might be of interest to consider them in detail. The first noticeable point is the rigidity of the device, the motor support being itself a truss. The next striking feature is the fact that the motor is out of the way, in a protected position where it takes up no room that would be otherwise important and where it leaves the alley unimpaired and perfectly clear for its original purpose. With the older form of drives the alleys are often closed up, or if not they should be, as the motors project in such a manner that should the alley be used for trucking, as is commonly the case in mills, the motors would be in constant danger of injury. Reference to the illustrations will show in one of these a comparison between the old style and the newer style, inasmuch as one of the frames in this line of frames has the motor installed in the old manner; that is projecting beyond the end of the frames.



ANOTHER VIEW OF THE MOUNTING.

This drive also includes a cast iron case which enables the chain to be run in oil if so desired. The chain cases had not been installed when the photographs were made, but it will be evident where they belong upon an examination of the pictures.

AN ALLEY AT THE NECRONSETT MILLS. ALL FRAMES EQUIPPED WITH CORLEY DRIVES.



ANOTHER SPINNING ALLEY. NOTE COMPARISON BETWEEN OLD DRIVE AND NEW.

The Print Shop at the Manomet Mills, New Bedford, Mass.

Textile concerns which sell their product under a trade mark naturally consume a tremendous amount of printed mattter in the course of their business, especially the larger ones. This item is so large in the activities of the Manomet Mills, the $3,000,000 enterprise of New Bedford, Mass., that the management has made a printing plant a direct adjunct of its own.

The accompanying picture gives a view of the printing plant. It turns out all the stationery, wrappers, tags and labels of the Manomet Mills, of which William Whitman, of Boston, well known leader of textile enterprise, is the head.

It is claimed for it that the printing establishment will compare favorably with any commercial job printing plant in New Bedford. It is located in a new building situated in the rear of No. 1 Manomet Mill. There are five job presses, one Whitlock cylinder press, and a Kidder rotary press that is capable of turning out 24,000 sheets 60½ by 24 inches per hour. Besides this two-color press, there is equipment in the shop for doing a great deal of four-color work. A 32-inch Oswego cutter has been installed, as well as many racks and cases for storing forms, cuts and supplies.

The most modern apparatus obtainable, such as steel furniture and all-steel type cases, has been installed. The Manomet Mills is the only concern in the city and one of a very few in New England to maintain such a plant.

An Open Challenge.

The following members of the American Cotton Manufacturers Association do hereby challenge any four Dingbats from the National Cotton Manufacturers Association for two four-ball matches to be played at Atlantic City on the afternoon of May 28th:

Arthur J. Draper, Charlotte, N. C.
W. S. Lee, Charlotte, N. C.
Louis Jacoby, Charlotte, N. C.
S. B. Alexander, Jr., Charlotte, N. C.

No player will be permitted to kick his opponent while a putt is being made. All other golf formalities are to be waived.

Any four National Association Dingbats that desire to accept this challenge, will please notify W. D. Adams, secretary, Charlotte, N. C.

Nearly all the cotton consumed in the United States is domestic upland cotton. The term "upland" is applied to all cotton produced in this country, except Sea Island cotton. The manufacturers in the cotton growing states use very little Sea Island or foreign cotton, having consumed 26,900 bales of both kinds combined in 1918. More than one-half of the Sea Island cotton consumed in the country was reported from Massachusetts. Establishments engaged in the manufacture of thread and automobile tires and those who spin yarns designed for these purposes report the largest consumption of this kind of cotton.

Cotton Growing in the Imperial Valley

by Bruce MacRae ····· El Centro, California

Field of Pima Cotton Near Seely, Oct. 4th, 1918.

The history of the cotton industry in the Imperial Valley dates from the year 1909, although there was some cotton raised on the Mexican border, at Calexico, as early as 1901. Settlers from some of the older cotton states planted a few seeds in 1901, and the cotton reproduced itself from the stumps of the old plants for several seasons in succession. The breaking of the Colorado River levees in 1905, however, put a stop to nearly all agricultural experiments, and indeed, threatened the destruction of the Valley itself until the breaks were closed in 1906, and normal conditions returned. The planting of cotton on a commercial scale began with the season of 1909, when 450 acres were planted and the yield, 350 bales, proved that the industry could be profitably engaged in.

The earliest bale of cotton ever ginned in this section of the United States was grown near Calexico, and was ginned on June 17, 1914; moreover, a second bale of cotton, planted on the same ground from the seed of the first bale, was ginned on October 15 of the same year.

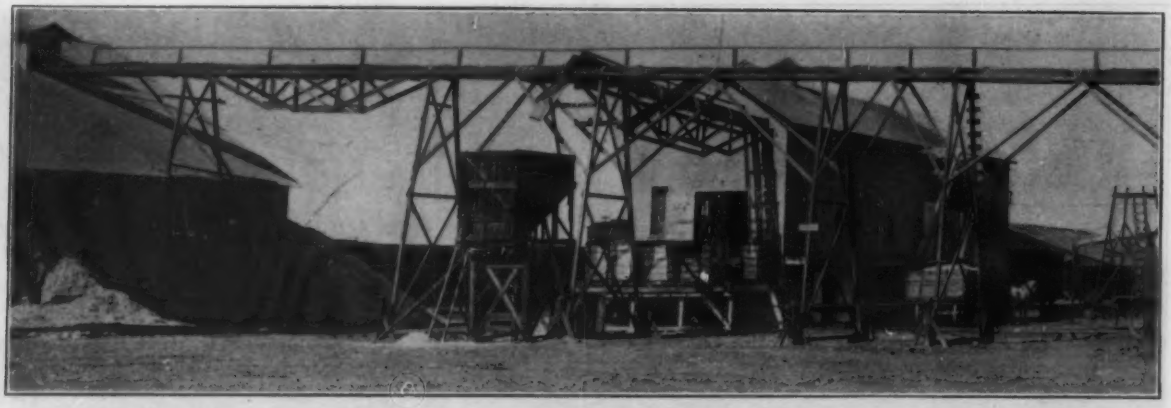
This record was ten days earlier than the record formerly held at Brownsville, Texas. The climate of the Imperial Valley is such that cotton plants live practically the whole winter through, without frost damage, hence it is easy to see how "volunteer crops" may be obtained for two, and often for four years in succession. While this volunteer crop may show some deterioration in seed and in the quality of the fibre, the yield is frequently heavier than from seedling crops; also, the volunteer crop has the advantage of maturing sufficiently early to escape the water shortage, which frequently occurs in the latter end of the year's dry season.

The first commercial crop, that of 1909, grown on 450 acres, and producing 350 bales, was sold on a rising market, thereby affording an incentive for more extensive operations in the following season, and the increase, except for the depression following the beginning of the great war in 1914, has been steady until now, in 1919, the industry has assumed such proportions as to rank it high among the agricultural pursuits of the state of California.

Acreage and Yield for Each Year From 1909 to 1918, Inclusive, on Both Sides of the International Line.

Year.	Acres.	Bales.
1909	450	350
1910	9,000	5,986
1911	12,000	9,790
1912	9,000	8,215
1913	20,000	20,000
1914	66,000	43,000
1915	40,000	27,000
1916	90,000	55,000
1917	120,000	65,000
1918	145,000	80,000

While the foregoing table may not appear formidable in point of acreage, it suffices to give an adequate idea of



Compress and Gin at Calexico, on the International Line.

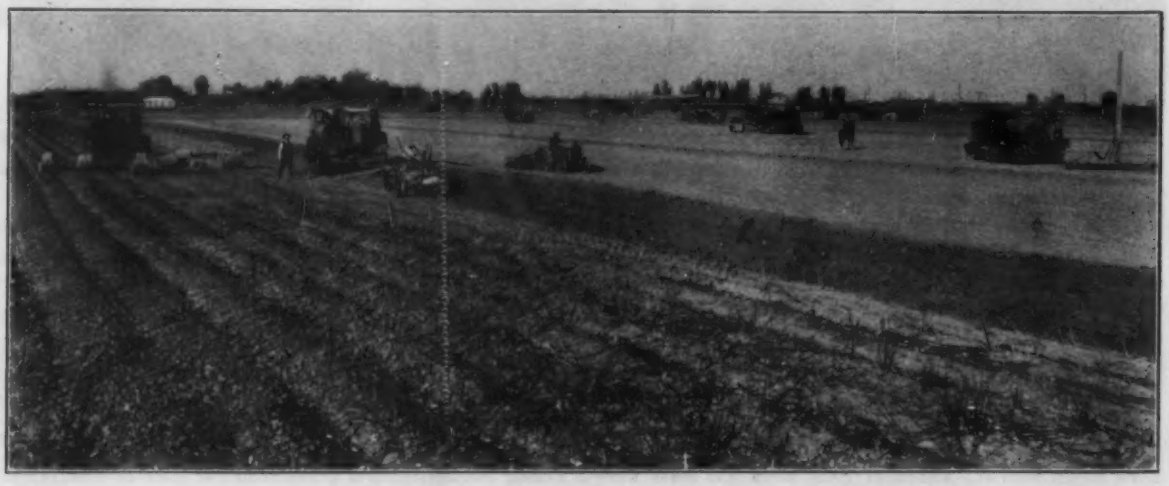
the wonderful productivity of the soil, both in the California valley, and below the line in Baja California. The prospects for the season of 1919-20 are for a doubling of the acreage devoted to cotton on both sides of the line. The quality is uniformly excellent as regards length of staple and the manner in which the crop is handled, both important factors in the success of growing and marketing this most uncertain of all the crops of the country.

The gininng has about kept pace with the development of the industry, and plants for handling short staple cotton are located in all the principal towns of the valley. El Centro has quite a large cotton seed oil mill, operated by a Texas concern. At the town of Seely, eight miles west of El Centro, on the line of the San Diego and Arizona Railway, is a well equipped gin for handling Pima, and other varieties of long staple cotton. Calexico has a large compress, and plans are afoot for the erection of a larger, and better equipped long staple gin at Brawley.

Short staple cotton was grown almost exclusively for the first three years after the inception of the industry, big bolled varieties of Texas cotton proving most popular, and best adapted to conditions in the valley.

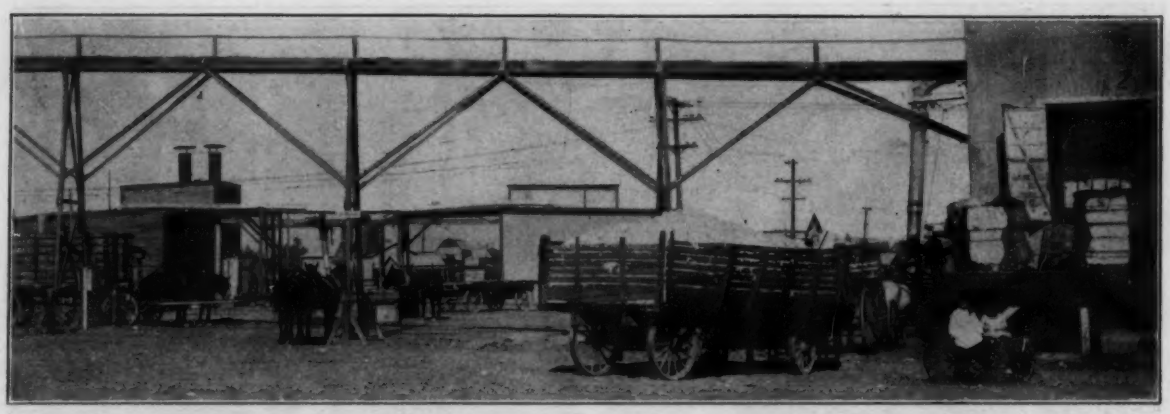
The "Triumph" and "Bowden" are predominant varieties. Triumph (Mebane's) cotton, has now become the variety of short staple most favored; the staple runs uniformly from ¾ to 1¼ inches in length. A number of short staple varieties have been introduced and tried out, among them a Georgia cotton, known as "World's Wonder;" this, and other varieties of short staple cotton from the Southeastern states have proven valueless in the Imperial Valley, and their cultivation has since been discontinued.

Egyptian (or rather "Pima") so called from the fact that it is almost a distinct variety, developed upon the lands of the Pima Indians in the Yuma Valley, and the Salt River Valley, in Arizonia, and described fully in Cotton for January, 1918, is a strong favorite among long staple varieties. Pima was first planted in the Imperial Valley in 1912, and has from the first proven highly successful. The yield is about ½ to ¾ bale per acre. Pima, while not of such long staple as some other varieties, is much in demand among manufacturers of automobile tires, and the finer grades of cotton goods, and owing to the success with which it has been grown on both sides of the line, it has attracted the attention of several manufacturers of tires, among them the Goodyear people. The acreage devoted to this, and Durango cotton, bids fair to be substantially increased in this and succeeding years.



Planting Time on Timken Ranch, Between Imperial City and Brawley.

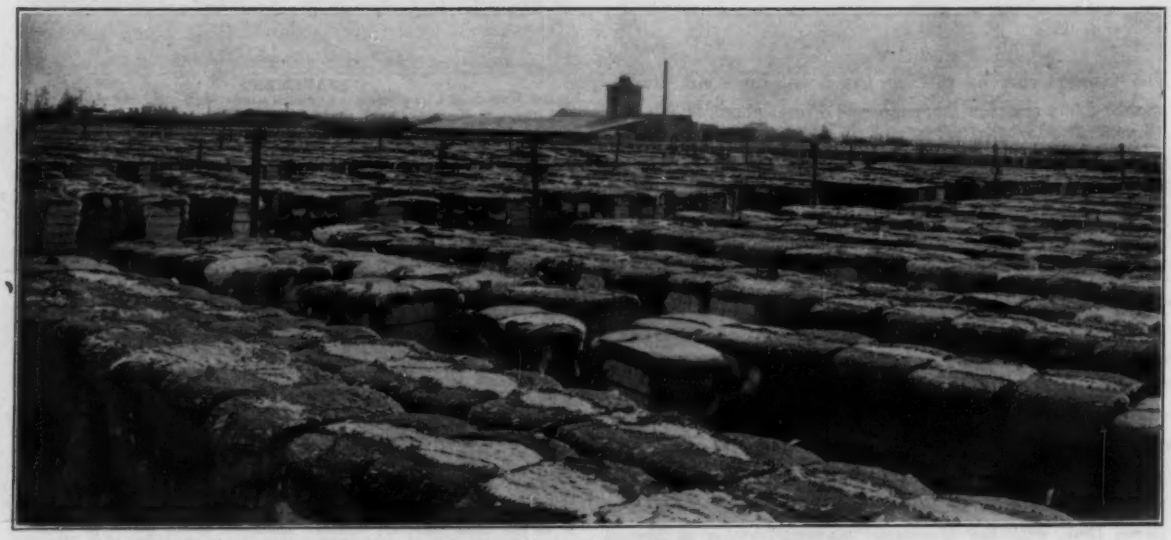
Durango long staple, so called from the Mexican state from which the seeds were first introduced, is a cotton of wonderfully strong, silky staple, and sells for a good price in the markets. The acreage devoted to this and Pima,



will probably be about 35,000 this year, about equally distributed on both sides of the line. One reason for the rather limited cultivation of these varieties of long staple, is that there have not, thus far, been adequate facilities for ginning it. Also, another important factor, is the high cost of picking these varieties of cotton, due to the difficulty of getting it out of the small bolls, to which the lint clings with the tenacity of "bre'r possum up a 'simmon tree."

Growers who have planted Pima and Durango extensively, are agreed that it is a most satisfactory crop, in that it does not shed its squares and bolls under adverse weather conditions, as do the short staple varieties; there are times in the year here in Imperial Valley, when the wind blows a veritable gale, frequently for days at a time, and these two varieties of cotton seem to stand the racket far better than some others.

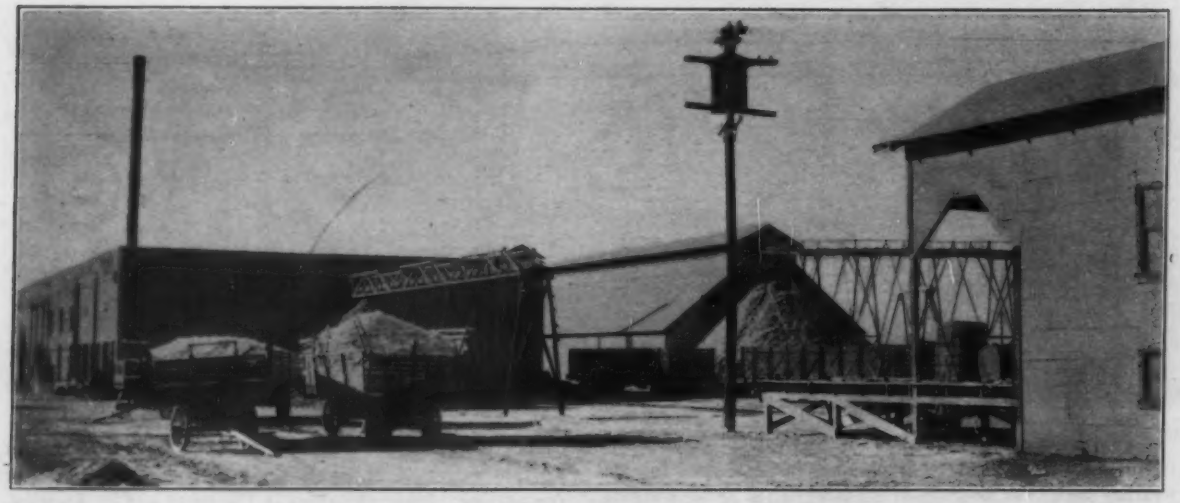
Methods of cultivation in cotton growing are essentially the same in all American cotton sections except for the differences obtaining under irrigation. In January, after the stalks are broken down, water is turned onto the land, and after the surface has hardened sufficiently to keep a team from bogging or overloading their feet with an excess tonnage of "'dobe" soil, the ground is "flat ploughed," then broken up with a fourteen-inch plow, after which the clods are broken with a disc plow. Then the land is thrown up into ridges about eight inches high and is then ready for seeding. Planting begins in the latter end of January, or the early part of February, and continues until about the middle of April or the first of May. Cotton chopping starts on the earlier varieties, early in April, and is a much less complicated operation than in Georgia, or other of the southern states, as grass does not infest the Valley to quite the extent that it does in the South, and further, the rain may be "turned on and off" at pleasure. Picking begins in late June, and continues until well after New Year; sometimes until March in the case of Durango and Pima cotton.



Cotton in the Compress Yard at Calexico, Season 191 8-19.

The cost of production will undoubtedly be of interest to both growers and manufacturers in the Southeastern states, but, owing to the varying conditions in Imperial Valley, it will be a question most difficult to answer in a thoroughly satisfactory manner; however, the following table, based on present costs, will be somewhere near a fair average.

Cost of preparing ground for seed, per acre	$10.00
Cost of seed	.75
Seeding	6.00
Chopping	3.00
Cultivating	3.00



Cotton Seed Oil Mill and Gin No. 2 at El Centro.

Irrigating (labor and water)	6.00
Picking (½ bale to acre)	
Hauling	2.50
Ginning	3.75
Insurance and storage	2.00
Rent	20.00
Sundries not included above	3.00
	$60.00

The average cost of picking has been, for short staple, about $2.00; and for Durango and Pima, about $6.00.

The cost of ginning long staple is about three times the cost of ginning short staple. It is expected, however, that improved facilities for ginning will lessen this part of the cost of production. As to the picking cost, this will of course depend entirely upon the labor supply in the future. By far the most satisfactory labor thus far introduced into the Valley, are the Texans and Oklahomans from the cotton growing sections of these two states. The old standby, the southern negro, is here only in limited numbers at present, and cannot as yet be considered a factor in the labor market. Many planters express a preference for the Hindu and Mexican laborers. However, the sentiment against this class of labor makes their employment an uncertain quantity at best, and it must be remembered that, with the Mexican, "manana" looms as big on this side of the line, as it does in the land where it flowers continually.

Upon the whole, it may be remarked that the cotton growing industry in California has "come to stay," especially in the Imperial Valley, where climate, soil and all other factors making for the success of the undertaking are to be found at their best. The further development in this section will only be limited by the amount of acreage available, and by the future of the crop as a "money getter" for your Californian has long since learned the valuable lesson of letting go of a crop which no longer yields an adequate return upon the labor and capital invested, and turning his attention to other crops that do pay.

Railway facilities will be greatly enhanced with the completion, at an early date, of the San Diego and Arizona Railway. This line of railway will furnish a direct line of outlet to tidewater at San Diego, distant about 135 miles from the Valley, and will also, upon its completion, give direct rail connection with the East, via Yuma, and the Southern Pacific main line to New Orleans, and other Eastern markets. The photos accompanying this article will serve to give a fairly good idea of certain phases of the development and growth of the cotton industry in this "Dixie Land" of the Pacific Coast.

STATEMENT

of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of COTTON, published monthly at Atlanta and Dalton, Ga., for April 1, 1919.

State of Georgia, County of Fulton, s. s.

Before me, a Notary Public, in and for the State and county aforesaid personally appeared O. A. Sharpless, who, having been duly sworn according to law, deposes and says that he is the General Manager of COTTON, and that the following is to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, W. R. C. Smith Publishing Co., Atlanta, Ga.; Editor, L. L. Arnold, Atlanta, Ga.; Business Manager, F. C. Myers, Atlanta, Ga.

2. That the owners are: W. R. C. Smith, Atlanta, Ga.; J. W. Smith, New York City; W. S. Cushion, Cleveland, O.; O. A. Sharpless, Atlanta, Ga.; J. C. Martin, Atlanta, Ga.; H. H. Kelley, Atlanta, Ga.; W. J. Rooke, Atlanta, Ga.; L. L. Arnold, Atlanta, Ga.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. O. A. SHARPLESS, Gen. Mgr.

Sworn to and subscribed before me this 29th day of March, 1919.

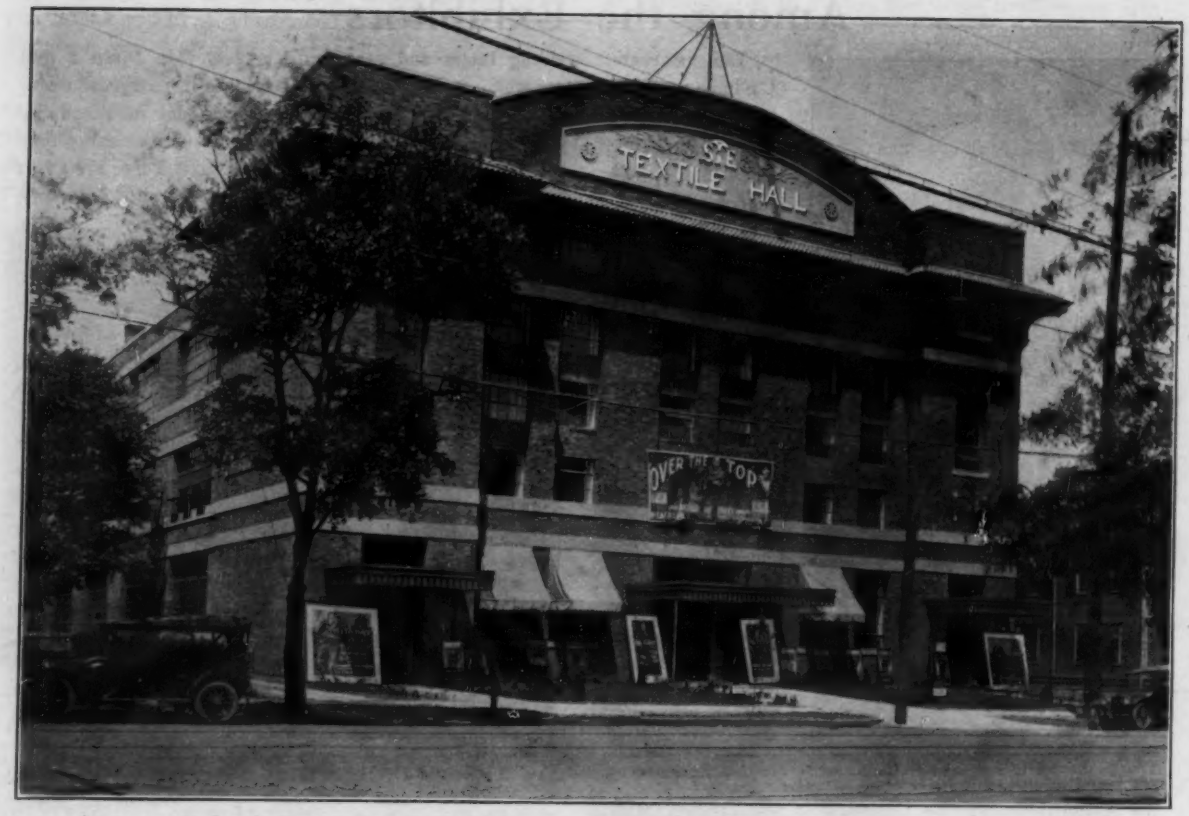
(Seal) E. L. PHILPOT.
Notary Public.

(My commission expires February 23, 1923.)

The annual meeting of the Southern Textile Association and the Third Southern Textile Exposition, Textile Hall, Greenville, S. C., May 5, 6, 7, 8, 9, 10.

The annual meeting of the Georgia Manufacturers Association, the Ralston, Columbus, Ga., May 14, 15.

The annual meeting of the Cotton Manufacturers Association of Georgia, the Marlborough-Blenheim, Atlantic City, May 26.



The Third Southern Textile Exposition

The Third Southern Textile Exposition which is scheduled for the week of May 5th to 10th at Greenville, S. C., gives promise of being the big success which has hitherto befell this southern machinery show.

The First Southern Textile Exposition was held in Greenville in November, 1915. It was the result of hard work, constant application and extraordinary cooperation on the part of all interested. At that time it became apparent that a suitable building was necessary for the Southern Textile Exposition. The company became incorporated and began work on the new exposition building, a photograph of which is shown upon this page.

The second Southern Textile Exposition was held in December, 1917, in this new $250,000 building, that because of war reasons, had even at the time of the show not been entirely completed. However, it marked the fulfillment of an ideal, which had occupied the minds of many Greenville men since the First Southern Textile Exposition was held in that city in 1915. The Third Southern Textile Exposition, which opens its doors to the public on May 5th of this year, will be the first textile exposition which has been held in the building since it was entirely completed. It is needless to say that the attendance will be large. A great many mills have already arranged to have their superintendents and department heads attend this exposition either in a body or in relays at the expense of the mill. A careful canvass of the southern mills made by COTTON shows that from the 125 replies received an average of between five and six men per mill are going to be sent to this exposition at the expense of the mill.

In 1917 Greenville worked under a handicap from the standpoint of hotel accommodations. At Camp Sevier 20,000 national soldiers were located and the relatives of these soldiers were thronging the hotels in Greenville, thereby reducing the regular accommodations. However, General Manager F. M. Burnett, of the Southern Textile Exposition, Inc., advises that this year there are ample accommodations for all who may wish to attend. Furthermore, as the exposition this year is being held right in the middle of the spring months, weather conditions are almost certain to be ideal.

The Southern Textile Association is to hold its annual meeting in Greenville on the 8th and 9th of May, coincident with the Third Southern Textile Exposition and a tentative program for these two days was published in the April number of COTTON.

In addition to the superintendents and overseers attending this convention there has been called for this same week a meeting of Textile Welfare Workers. This conference has plans outlined for Thursday and Friday of the exposition week and the Southern Textile Association members will be asked to meet with the welfare workers to give advice and for round table discussion purposes.

Arrangements have been made to have one or more brass bands furnish music the entire week of the exposition and many other features have also been arranged by the committee of men in charge of this feature of the exposition.

'Nuf said! We will meet you there.

Among the Exhibitors

J. H. SPENCER.

The Barber-Colman Company, of Rockford, Ill., manufacturers of the well known Barber hand knotters and various models of warp tying machines, will occupy suitable space at the show to display an interesting machine. J. H. Spencer, the southern manager of the Barber-Colman Company will be in charge. Mr. Spencer has been in the employ of this company nearly fourteen years and during that time has worked not only at Greenville, but also at the plant at Rockford, Ill., at the Boston office and in their office at Manchester, England. He has, therefore, a very wide experience with their product and its relation to the textile industry. As Chairman of the Sub-Committee on Machinery and Supplies of the First Southern Textile Exposition at Greenville, Mr. Spencer made an enviable record for himself as a successful and consistent worker. Since that time he has been elected President of the Greenville Textile Club and is one of the most popular and efficient boosters for Greenville. There are several other things we know about Mr. Spencer, and we have the written permission of Field Manager R. E. McCausland, of the Rockford office, who will also be present, to print this other material at our discretion. We prefer, however, to leave these smaller details for Mr. Spencer to explain personally to the callers visiting his exhibit to see the machine he is demonstrating.

The Bird-Wilcox Company, Inc., Atlanta, Ga., manufacturers of oxy-acetylene welding apparatus of all kinds, oxygen and acetylene gas and other supplies used in oxy-acetylene welding and cutting, will occupy spaces 87 and 88 on the first floor with machines being operated under actual working conditions welding broken textile parts. This company needs little introduction as they were present with a splendid exhibit and demonstration at the Southern Textile Exposition in 1915, and again in 1917. The Bird-Wilcox Company will have on exhibit all grades of cutting and welding torches which are manufactured in Atlanta, as they are the only manufacturers of this equipment in the South. They will also have on exhibit all styles of oxygen and acetylene regulators which are used for welding and cutting by the oxy-acetylene method, and oxygen and acetylene gas. They will also show an acetylene generator, lead burning apparatus, decarbonizing apparatus, all different welding materials, asbestos goods, welding tables and everything necessary to equip a first class welding shop. The exhibit will be in charge of President George Bird with a first class welder in attendance to give regular welding demonstrations at the exposition.

JAMES H. MAXWELL.

The Keever Starch Company, Columbus, Ohio, will exhibit Victor mill starch; laundry starches of wheat and corn; gluten, a product washed out of the tarch; corn oil; and gluten feed for stock. This latter product is ground from corn hearts after the oil has been pressed out. It is very probable that General Manager Charles J. Kurtz, from Columbus, Ohio, will be present. The exhibit will be in charge of Southern Agent James H. Maxwell, assisted by Jack Iler. Mr. Maxwell is too well known in southern mill circles to need any introduction from us. He came to Greenville in 1886 and has been connected with the cotton textile field in some capacity ever since.

The Graton & Knight Mfg. Co., Worcester, Mass., will show a stationary exhibit consisting of their several varieties of leather belting designed for special applications in textile work. Also a full line of mill strapping will be shown. The factory behind the products counts in buying mill belting just as it does in buying mill machinery and the representatives who will have charge of this exhibit, will take pleasure in giving to textile visitors not only an engineering opinion concerning their power transmission difficulties, but will further gladly explain some of the details that are not appreciated by the general public about the factory behind the G. & K. belting.

The McNaughton Manufacturing Company, Maryville, Tenn., will show the McNaughton grate bar which is composed of separate fuel carrying units held in alignment by flat bars extending the whole length. Each unit can expand freely without crowding, thus preventing warping and sagging, it is claimed. Any parts of the grate can be easily and inexpensively repaired, thus reducing the cost of the upkeep. Representatives of the company will be present to explain the merits of this proposition.

The Manufacturers' Warehouse Company, of Greenville, S. C., has reserved spaces in which to exhibit the products of several companies who carry their products in stock in the Greenville warehouse of this organization, where they will be ready for prompt shipment to customers when

ordered out by the salesmen of the various organizations. This exhibit will be in charge of H. Callaway Mims of the Manufacturers' Warehouse Company.

The Crouse-Hinds Co., of Syracuse, N. Y., will present an interesting display of their electrical specialties for textile mill use. These specialties will be suitably demonstrated and explained by representatives of the company who will be present during the entire week.

"SUNNY JIM."

The Rogers Fibre Company will have an attractive exhibit at the Southern Textile Exposition at Greenville, S. C. This exhibit will be in charge of James L. Nieukirk, Manager of the "Leatheroid" Sales Division, of the Rogers Fibre Co., at Philadelphia. Mr. Nieukirk is known all over the South as "Sunny Jim" and those who know him, know how this fits his genial disposition and friendliness. The Leatheroid line to be shown will include No. 1 seamless roving can with the patented rolled-over fibre top, a can that is distinctively up-to-date, smooth inside and out, and very desirable for mill use and service; the No. 2 seamless roving can with polished steel top rim; two styles of their mill car, No. 2 known as the "Leatheroid" steel-clad car, the walls of which are sheet steel closely riveted to hard fibre, corners reinforced, steel over wood top rim, metal bottom band and self-oiling wheels. Also the No. 3 mill car of the same pattern except that it is all fibre and protected with hard wood center bands; also "Leatheroid" mill boxes made very strong with steel over wood top rim, hard wood shoes and new special steel protecting corner, giving maximum wear not only to the corner of the box but to the shoes. They will also show their combination doffing cars with a stationary box and a loose box with a steel banded platform; these cars made in either all fibre or steel surfaces over fibre. Other "Leatheroid" goods will be shown and it will be an exhibit representing the very latest construction of cotton mill receptacles and carriers. Leon B. Rogers, General Manager of the Rogers Fibre Co., expects to be present and assist Mr. Nieukirk in pointing out the superior qualities of the "Leatheroid" line.

The Baltimore Belting Company, of Baltimore, Md., will be at the show with an exhibit consisting of a display panel on which will be shown its various leather specialties for textile mills and some of the raw material from which they are made. There will also be a number of rolls of their leather belt in sizes and styles most in demand by those attending the show. The exhibit will be in charge of R. V. Whitener, manager of the Southern Branch at Spartanburg, who has represented this company in the South for the past twelve years. He does not travel regularly and welcomes this opportunity to see his old friends. Charles B. Iler, of Greenville, representing the Southern Branch in the Carolinas; W. H. Fisher, who covers Georgia and Alabama, and James A. West, Jr., traveling Virginia and North Carolina from the factory direct will also be in attendance.

The United States Graphite Company of Saginaw, Mich., will display a general line of graphite and graphite products. Practically all of their graphite products are in general use among textile manufacturers, but they will especially emphasize and call attention to their Mexican boiler graphite, which is used as a scale remover and remedy in steam boilers. It acts mechanically and removes scale from the boiler by entering into the minute cracks that appear and working down through these cracks until it reaches the boiler metal to which it imparts the graphite finish that does not allow the attachment of further scale.

J. E. SIRRINE.

J. E. Sirrine, mill engineer and architect, Greenville, S. C., will have an exhibition of photographs showing some of the mill work and construction features carried out under his plans and specifications. Several of the representatives from his office will take charge and be on duty during the exposition. While no one member of this organization will be known as having personal charge of the exhibit it is with pleasure that we reproduce the photographs of Mr. Sirrine, the founder of the organization which now bears his name and the fruits of whose labor may be seen in hundreds of southern textile towns. The total cost of the many industrial plants designed by Mr. Sirrine and his organization run into the hundred millions of dollars and that amount is rapidly growing from year to year. Mr. Sirrine has taken a leading part in the Southern Textile Exposition since its inception and the Southern Textile Exposition building in Greenville was designed in his office and built under the supervision of one of his engineers.

The Greenville Spool & Manufacturing Company, makers of spools and skewers at Greenville, S. C., has been operating something over two years. The daily production of this factory is now 2,000 spools, 4,000 skewers, 1,500 under clearers and a large number of variety turnings. This company also manufactures warper and twister spools with plain heads and metal shield heads. They operate two patented moist-air dry kilns and their plant is equipped with all the latest spool-making machinery. D. F. Folger, secretary, and M. T. Maxwell, manager, will take charge of this exhibit at the exposition and be in attendance daily.

The Atherton Pin Grid Bar Company, of Providence, R. I., will exhibit their improved pin grid bars for cotton pickers. These grid bars are adjustable. L. D. Armstrong,

the treasurer of the company, will probably be in charge.

The Burroughs Adding Machine Company, of Detroit, Mich., will have on exhibit a number of different models of figuring machines, especially those adapted for the work of textile mills. One of the machines to be exhibited is especially adapted for textile work, as it will add two or more groups of figures at the same time. A typical use for this machine is found in the cloth room where it is necessary to count the number of cuts in each case or shipment and, at the same time, the yards in each cut. This machine is also equipped with fractional figures so that fractions of yards may be added and automatically translated into yards in the total. This model is so equipped that a number of carbon copies can be made from invoices to be used for various purposes. A number of other attractive models of the Burroughs machine will be shown. Floyd Hughes, manager of the Greenville branch of the Burroughs Adding Machine Company, will be in charge of this exhibit. He will be assisted by other representatives of the company.

The Builders Lumber & Supply Company, of Anderson, S. C., will display their products in an interesting manner.

The Carolina Supply Company, of Greenville, S. C., will show a general line of mill supplies, machinery, tools, steam fittings and electrical equipment. In attendance at the exhibit will be various officers of the company and a number of their representatives who are constantly meeting the mill trade in their daily work.

Crompton & Knowles Loom Works, Worcester, Mass., will be represented through their Southern Agents, Alexander and Garsed, of Charlotte, N. C. In the space provided this company is making arrangements to provide for the entertainment of their friends and Mr. Alexander of Alexander & Garsed will be on hand to see that all callers receive due consideration.

The Columbus Truck & Supply Manufacturing Company, of Columbus, Ga., manufacturers of trucks and dyeing machinery will explain the advantages of their products to visitors at their exhibit.

The Detroit Graphite Company, of Detroit, Mich., makers of paints of all description, interior and exterior, for cotton mills and houses or other buildings connected with the mills, will offer an interesting exhibit of their various products. This will include "Sta-White," a high gloss white interior paint, which has been used on many mills in the South and in other sections of the country; specially durable combinations of colors for the inside and outside painting of cottages and many other specialties for which they have a constantly increasing demand from the South. This exhibit will doubtless be in charge of G. W. Cureton, the Greenville representative while other representatives from the factory at Detroit, and also from the New York office will be in attendance.

The Dary Ring Traveler Company, of Taunton, Mass., has secured suitable space which will be devoted to a display of their products. Southern representatives of this company will be in attendance.

The Empire Manufacturing Company, of Goldsboro, N. C., will show examples of their packing cases made from wood veneer which are exceptionally strong and light.

The Carolina Specialty Company, Charlotte, N. C., will be represented at the Southern Textile Exposition by their president, J. Lindsay Ross, and their treasurer, R. Galloway Ross, and their secretary, C. J. Carpenter. Their exhibits will occupy booth 226; and as representatives of the Trus-Con Laboratories, Detroit, Mich., manufacturers of waterproofing, dampproofing, and technical paints; and the Anti-Friction Belt Dressing Company, Baltimore, Md., manufacturers of Anti-Friction belt dressing; The Barrett Company, of New York and Philadelphia, manufacturers of disinfectants and wood preservatives. They will have a full line of their different products and will be pleased to have their old friends call around at their booth often.

F. R. HOUSE.

The Main Belting Company, manufacturers of Special Textile Leviathan belting, will be represented at the textile show at Greenville by F. R. House, who represents this firm in the two Carolinas, F. L. McIllwain, of their service department, and Charles G. Sherman, branch manager at Atlanta. This company's product is really a product of the South as its basis is duck, woven in the southern mills under special specifications. The duck is then treated with special compositions which are the combined results of the findings of engineers and chemists extending over a period of many years. The belt is lock-stitched, thoroughly stretched and aged before it leaves the factory and through its treatment has proven itself as a superior method of increasing the efficiency of operation in textile mills. On looms this belt assures an even running of the loom with very little, if any, stretch, and due to the treatment it receives in its manufacture is not subject to the "come and go" caused by close proximity to humidifiers. The duck is so woven and stitched as to prevent its fraying at the edge when contact is made with a shifter and a clear, concise guarantee is made for Special Textile Leviathan by its manufacturers. A service department in charge of F. L. McIllwain, a mill man of twenty years experience, is maintained at Atlanta. This department makes all initial installations of Special Textile Leviathan and is conducted purely for the convenience of the Main Belting Company's customers and the education of mill operators to the use of this belting. F. R. House represents the Main Belting Co. in the states of North and South Carolina and is a belt man of recognized ability, having made a close study of belting conditions in textile mills for a period of about eight years. Mr. House is largely responsible for the successful application of Special Textile Leviathan belting in many of the large textile mills of the South and his many friends will be glad to meet him at the Textile Convention in Greenville.

The National Starch Company, sales representative of the Corn Products Refining Company, of New York, will exhibit a full line of their industrial products, including thick boiling starches, thin boiling starches, dextrines, and British gums. They will also show some specialties. This exhibit will be in charge of Dr. W. R. Cathcart, the technical director of the Mill and Paper Division of this organization. John R. White and M. Ousley, of the Greenville office, and Albert G. Smith, of Atlanta, will also be in attendance.

The American Kron Scale Company, 430 E. 53d St., New York City, will display their automatic, springless "Load and Look" scales, that are particularly suitable for the textile industry. These will doubtless include the cotton or platform scales, scales suitable for the slasher room and cloth room, and also the special lap scales made by this Company for picker room work. The exhibit will be in charge of Southern Representative J. Kirk Rowell, who has offices at 405 Urban Bldg., Louisville, Ky. Other representatives of the organization will also be present.

B. R. WOFFORD.

Jenkins Brothers, 80 White St., New York City, will have an excellent display of their well known valves and packings. The renewable disc valve manufactured by this company has attracted much attention among the southern mills because of its durability and convenience in repair. The exhibit will be in charge of B. R. Wofford, of Atlanta, who handles the southern section for this company. Mr. Wofford is too well known in the trade to need comment here.

Huntington & Guerry, electrical contractors and specialists in textile mill electrical work, with offices and headquarters at Greenville, S. C., will be among those present. At their exhibit place they will be glad to welcome old friends and make new ones and while their exhibit will be largely photographs covering many of the representative power and lighting installations they have made in southern cotton mills, there will be many special features about these installations that will prove of interest to the visitors. Messrs. Huntington & Guerry will be present during the show.

The Charlotte Leather Belting Company, of Charlotte, N. C., will display their different varieties of belting and leather specialties for textile work.

The Hockaday Company, of Chicago, Ill., will present in their exhibit the Hockaday system of finishing walls. This company manufactures a wall finish known as "Interio," which they claim can be applied to a wall without a size or under-coat of any kind and that two coats of this material is all that is necessary to produce a lasting finish on either plaster or wood. "Interio," it is claimed, washes as easily and cleanly as china and never peels, cracks, or scales. This exhibit will doubtless be in charge of O. H. Johnson, assisted by representatives from the factory. At the last show the Hockaday souvenirs were very much sought after.

COTTON, Atlanta, Ga., will have its usual space reservation and different representatives of this journal will be present during the entire week. They will be glad to greet their many friends in the spaces allotted to them for exhibit purposes.

The R. D. Cole Manufacturing Company, of Newnan, Ga., will exhibit photographs and drawings of boilers, tanks, dyeing machines and other heavy mill equipment manufactured by them. Representatives of the company will be present during the entire week.

The Clipper Belt Lacer Co., of Grand Rapids, Mich., will show a demonstrating exhibit of the Clipper belt lacer in various sizes and for a variety of purposes. Representatives from the factory will doubtless be present to explain the advantages of this device.

Wm. Firth, 200 Devonshire St., Boston, Mass., will exhibit mechanical sweepers and other devices manufactured by this company. The exhibit will be in charge of J. J. Smith, of Boston, and Milton Smith, of Greenville, S. C.

Hudson & Kohn Company, of Greenville, S. C., will show various styles of goods converted by them. This company are cotton goods distributors for a large variety of fabrics manufactured in and around Greenville. A few of these are sold in the original or unfinished state, but most of them are converted either in Southern bleacheries or in Eastern bleacheries. The exhibit will be in charge of David Kohn, assisted by others from the organization.

E. P. GURLEY.

The Southern Electric Supply Co., of Atlanta, Ga., will have an extensive display. This exhibit will be in charge of E. P. Gurley, who covers North and South Carolina for the company. Mr. Gurley previously covered this same territory for the Tower-Binford Company, of Richmond, Va., and has a host of friends which he has acquired chiefly by reason of his square dealings and giving to the engineers of mills valuable suggestions in the matter of engineering ideas and the proper selection and installation of apparatus or electrical material in their respective mills. They will exhibit a full line of Hazard Mfg. Company's rubber covered wires and cable, both stranded and solid; the well-known line of Chicago Fuse Mfg. Company's union renewable fuses, as well as cartridge fuses; Harvey Hubbell steel reflectors, especially the type used in cotton mills for proper lighting throughout the entire mill; Wagner Electric Mfg. Company's single phase motors; G. E. National Mazda incandescent lamps of the type and kind used in cotton mills. General Sales Manager C. D. Boyd will also be present throughout the week.

AMASA ST. ONGE.

The Bahan Textile Machinery Company, of Union, S. C., manufacturers and selling agents for cotton mill specialties, will show a loom equipped with the adjustable Corn rocker and parallel bearings, Stone shuttle checks and a Snow stop motion. Wm. H. Bahan, Jr., president of the Bahan Textile Machinery Company, will have charge of this exhibit. Connected with this exhibit, which will occupy spaces 40-41-42-43, will be an exhibit of the Brown St. Onge Company's adjustable grids for pickers and a Kleanol bobbin cleaning machine. Amasa St. Onge, president of the Brown St. Onge Company, will have charge of this portion of the exhibit.

The Morse Chain Company, Ithaca, N. Y., will have booths number 24 to 27 on the first floor, where they will show a facsimile of a spinning frame drive in operation, together with a large drive which will be in operation, that will show the action of the rocker joint and guide link in such manner that it will be impressive and instructive. The synchronism of lights and speeds is interesting to watch. In other parts of the building there will be Morse chains operating many textile and other machines. In addition they will have a large number of exhibit photographs of chain drives, and samples showing the construction of the product with literature and a valuable souvenir. If space in the building will permit of the exhibit, Mr. F. L. Morse, president of the Morse Chain Co., has offered the directors of the Association, a Thomas-Morse airplane, which achieved such wonderful results during the war, and holds records for speed in flying, climbing and driving, together with a Liberty motor and a Le Rhone motor. George W. Pritchett, southern representative of the Morse Chain Company, with a direct branch office at Greensboro, N. C., will be in charge of this exhibit. He will have with him during the Exposition, A. B. Wray and V. D. Morse, executives of the Morse Chain Company, Ithaca, N. Y., and also C. L. Saunders, advertising manager.

The Standard Fibre Co., 25 Miller Street, Somerville, Mass., will exhibit their popular "No-Waste" seamless roving cans. The "No-Waste" seamless roving cans have a reputation for quality and smoothness wherever roving cans are used and the representatives of this company who will have charge of the exhibit will call especial attention to these seamless, rivetless cans. This company will also exhibit doffing trucks and other special shaped receptacles both in plain fibre bodies and where necessary the steel clad type. Fibre cars or trucks are now becoming an important part of mill equipment. Standard cars are made of heavy gauge materials, extra heavy corners, clear quality hard Michigan maple mouldings, extra heavy malleable iron corner castings. All rivets are countersunk flush with the mouldings and the bottoms are guaranteed to be No. 1 long leaf North Carolina hard pine matched and heavily cross cleated. These trucks are then mounted on large face self-oiling casters.

E. S. Player, manufacturers' agent for textile specialties and mill equipment, Greenville, S. C., will have an extensive exhibit of the various lines represented by him and while he will be in attendance and in general charge of the different displays it is understood that other representatives from the different factories will also be on hand to more fully explain and demonstrate the individual devices. These devices are as follows:

American High Speed Chain distributed by Abell-Howe Company of Chicago is a metallic silent chain especially adapted for textile work. It is claimed that this chain possesses a number of distinctive features which are responsible for its excellent record in service and its facility to run for long periods without showing noticeable wear.

The Puro Drinking Fountain, made by the Puro Sanitary Drinking Fountain Company, of Haydenville, Mass., is a sanitary bubbling fountain so arranged that it is impossible for the lips of the person drinking to touch the bubbling device. The water from these fountains bubbles about one and one-half inches high and breaks, going just high enough so that a satisfying drink may be obtained. All surplus water drains into the waste pipe. In connection with these Puro bubblers, will be shown the Puro combination coolers and simple coolers whereby the water is circulated through an ice cooled chamber before reaching the bubbler.

The Morehead "Back-to-Boiler" System manufactured by the Morehead Manufacturing Co., of Detroit, Mich., and many other examples of the Morehead devices such as return, non-return and vacuum traps and other steam specialties designed to effect a tremendous saving in coal will be shown.

Electric, hand and belt-power elevators, automatic hatch doors, and gates as manufactured by the Westbrook Elevator Co., of Danville, Va., will be represented in Mr. Player's exhibit which also includes the Stuebing lift truck for inside trucking as manufactured by the Stuebing Truck Co., of Cincinnati, Ohio. The Stuebing truck is a device whereby the platform of the truck is in a separate piece and a large number of platforms are used with only one truck or conveying apparatus. These platforms may be loaded in one place ready for transmission, the mobile part of the truck slipped beneath the platform and one move of the handle raises the platform clear of the floor so that the platform and the goods upon it may be trucked to any part of the factory where a similar movement of the handle deposits the platform for unloading, and the movable part of the truck may then be taken to some other part of the mill for other trucking purposes. Mr. Player will also show Triumph electric motors and the International Moistening Company's system of humidification.

The Greenville Belting Company, of Greenville, S. C. who are also the southern distributors for the Bradford Belting Company, of Cincinnati, Ohio, will have on exhibit a complete line of new leather belting and leather specialties as applied to the textile industry. They will also show their method of rebuilding and reclaiming old leather belt-

ing after the mill has discarded it. This part of the exhibit should be of special interest to the textile mill man. M. C. Sanders, president and treasurer, and C. Graham Slaughter, secretary, will be in charge of the exhibit and in practically constant attendance at the booth.

Douglas Company's exhibit at the Third Southern Textile Exposition will be in charge of their Greenville Office Manager, Ira L. Griffin, who will be assisted by J. Frank Crawford and Guy L. Morrison, southern sales representatives. An exhibit that is interesting as well as instructive has been prepared and a complete display of Douglas textile starches will be shown. Also, numerous warps sized with Douglas textile starches will be on display and visiting mill men are invited to examine these warps to learn how they were sized and just what results were required and obtained. The Douglas Company representatives will be pleased to supply information pertaining to sizing and finishing and it is hoped that all visitors will take full advantage of this service.

O. R. S. POOL.

The Transmission Ball Bearing Co., Inc., 1050 Military Road, Buffalo, N. Y., will show a full line of Chapman ball bearings for line shaft hangers and power transmission purposes, including ball bearing fan and blower bearings, ball bearing loose pulleys, ball bearing pillow blocks for pickers. washers, etc., and ball bearing friction clutches. This exhibit will be in charge of O. R. S. Pool, the manager of the southern branch, which is located at Greenville, S. C. Mr. Pool is a native of Mississippi and was engaged in the mill supply and machinery business at Hattiesburg for many years. He was secretary and treasurer of the Watkins Machine and Foundry Company for seven years, and secretary and treasurer of the Union Manufacturing and Supply Company for five years. Both of these concerns were located at Hattiesburg. Later he removed to Asheville, N. C., where he became secretary and treasurer of the Sternberg Foundry & Supply Company, with whom he was connected for five years. This organization is now known as the Carolina Machinery Co., of Asheville. During the past three years he has traveled Western North Carolina for the Smith-Courtney Co., of Richmond, Va., who are the North Carolina and Virginia agents for the Transmission Ball Bearing Co. During this period he equipped many North Carolina mills with Chapman ball bearings made by this company and beginning 1919 he accepted his present position as manager of the Greenville branch of the Transmission Ball Bearing Co. A moving exhibit will be shown at the exposition where a demonstration of the friction saving and lubrication saving qualities of the Chapman ball bearing will be demonstrated.

Felt & Tarrant Mfg. Co., 1713-1735 North Paulina St., Chicago, Ill., will exhibit the Comptometer for performing all kinds of calculations. It is claimed that the Comptometer could hardly be better adapted to the figure work of cotton mills and textile plants if it had been designed especially for that purpose. It is adaptable to all of the various kinds of figuring found in such institutions. First it is a rapid adding machine, since it is operated by the single motion of depressing the keys. This same direct key drive makes the Comptometer an exceptionally speedy calculator. This exhibit will be in charge of Walter E. Sloan, of Charlotte, whom the artist has here depicted in a pen and ink sketch. Mr. Sloan's connection with this company dates from 1911, when he first went into the territory he now occupies to sell Comptometers. His territory embraces North and South Carolina, and besides his office in Charlotte he maintains offices in Raleigh and Columbia. He has a wide acquaintance in the cotton mills and textile plants as well as in other lines of industry and commerce. And everyone who knows Walter knows the Comptometer. You can't know one without knowing the other. It was even reported that Walter once demonstrated his machine at an Isle of Palms convention by calculating the number of the wild sea waves and intimating what they were singing. A part of the service rendered by Mr. Sloan to his clients is in showing them its application to the various forms of work, short cuts in handling figure problems and in supplying trained operators where wanted.

The Link-Belt Company, 39th St. and Stewart Ave., Chicago, Ill., will have an interesting exhibit under the supervision of their Philadelphia factory. This exhibit will be located in spaces 203-4-5 and will consist of a dummy end of a spinning frame with a standard silent chain drive and chain casing, showing the standard type of electric drive connection, as related to spinning frame and twister frame work. They will also have as a moving exhibit an interrupted vision machine showing the action of Link-Belt Silent Chain drives operating at high speed and presenting at the same time an interesting optical illusion. A

number of samples of silent chain will also be on exhibit. This exhibit will be in charge of C. R. Weiss, G. H. Burkholder, and C. Morrish from the Philadelphia factory. The southern representative, J. S. Cothran, from Charlotte, will also be in attendance.

The Allis-Chalmers Mfg. Co., Atlanta, Ga., will occupy space No. 229, on the second floor, but will not show any machinery or actual products of the company. They will have on hand special literature applying to the textile industry, for distribution. The exhibit will be in charge of Wm. Parker, sales engineer, connected with the Atlanta District Office, who has had special training on the application of this equipment to the textile mill. Berrien Moore, manager of the Atlanta District Sales Office, will also be in attendance and will be glad to meet old friends and new acquaintances among the visitors.

The American Cast Iron Pipe Co., of Birmingham, Ala., will have an interesting exhibit at the Southern Textile Exposition consisting of cast iron columns and water pipe. There will be an attractive exhibit of photographs of cotton mills built with "Acipco" columns showing their neatness and the small space occupied by them. There will also be on display their 2-inch cast iron screwed joint pipe which has the additional feature of a leaded joint to provide for deflection and expansion in the pipe line when laid underground. The exhibit will be in charge of E. N. Mattson.

O. E. SCHUPP.

O. E. Schupp, Southern District Manager for the Toledo Scale Co., is a man of many years' experience in this line. For the past six years he has been in charge of this company's southern business, covering everything east of the Mississippi River and South of Kentucky. Mr. Schupp has been largely instrumental in installing Toledo automatic springless scales in some of the larger cotton and textile mills in the South. His mission has been to promote efficieney in weighing operations in all branches of business. At the exposition he will have charge of the Toledo scale exhibit which we are advised will be very complete. Toledo scales are built on the gravity principle. Springs are not used in the counterbalancing construction. They will be found sensitive and accurate. Such scales installed in commissary or plant will last many years and will prove a protection against loss of time, material and money.

The Addressograph Company, of Chicago, Ill., with Southern branch at the Hurt Building, Atlanta, Ga., will exhibit their cotton mill pay roll machine. This machine eliminates the necessity of writing names with pen or typewriter on the pay roll forms. A name plate with the number, name and rate of the employee is made up and filed in the same manner as the regular card index system. Names of employees who discontinue their services are easily removed from the file and names of new employees inserted. A plate embossing machine for making additions or changes in names is furnished with each equipment.

Alexander Bros., large manufacturers of leather belting, with headquarters at Philadelphia, Pa., will present an exhibit of their products at the show.

Another exhibitor at the show will be the L. L. Barr Company of Greenville, S. C.

The Economy Baler Company of Ann Arbor, Michigan, manufacturers of baling presses of several types has taken space at the exposition and J. S. Hulme, the southern representative of this company with offices in the Empire Building, Atlanta, Ga., will be in personal charge.

The Goldsmith Company of Greenville, S. C., building contractors, will have an exhibit which will be in charge of F. M. deSessaussure.

The Greenville Iron Works, Inc., of Greenville, S. C., will show a variety of cotton mill castings and similar material. This company not only makes cotton mill castings in grey iron but also in semi-steel, brass and aluminum. They handle complete equipment for boring engine cylinders and doing other repair work in the mills.

The Hunter Manufacturing & Commission Company of 58 Worth St., New York City, will show in their exhibit a large relief map of the world on which will be indicated their nine domestic offices, their eight foreign offices, and the fourteen foreign localities in which they have direct agencies. It will be of interest to the representatives of their 52 mills and other friends in the textile industry, to see graphically the many channels through which these mill products are distributed. The Hunter Company's exhibit is located in Sections 217, 218 and 219, and will be in charge of Robert F. Bowe, and Samuel F. Gibson.

The Lombard Iron Works & Supply Co., of Augusta, Ga., will have a space where a representative will present the line of heavy mill equipment manufactured by this company.

The Ohio Blower Company, 9235 Detroit Ave., Cleveland, Ohio, will display the Swartwout rotary ball bearing ventilator. This ventilator has an ample hood surmounted by a large vane which causes the ventilator to respond to the slightest air current so that the mouth of the ventilator always faces away from the wind. These ventilators are proving very popular in the southern states. Doubtless one of their southern representatives will have charge of this exhibit.

The Oxweld Acetylene Co., of Newark, N. J., manufacturers of oxy-acetylene welding apparatus and supplies, will exhibit welding and acetylene apparatus of their manufacture and incidental supplies of value to textile mills. They will no doubt, as at previous expositions, have an operating exhibit showing the actual welding of broken parts. This company manufactures low pressure acetylene generators, regulators, blow pipes, etc. It is interesting to note that equipment of their manufacture is approved by the National Board of Underwriters Laboratory for installation on insured premises. F. R. Chadwick, supervising sales engineer, will have charge of this exhibit.

Pratt & Lambert of New York City, manufacturers of paint, will have a suitable exhibit at the exposition.

The Park Manufacturing Company of Charlotte, N. C., will have space in which a representative will call attention to the advantages of the freight elevators manufactured by this organization. Demonstration will be made on the freight elevator in the textile building which was furnished by this company.

The Judson Mills at Greenville, S. C., will display a line of tetxile products manufactured by them. Inasmuch as this is one of the few mills in the South manufacturing fine goods, its products will, naturally, be of much interest to visiting mill men.

The Lunkenheimer Company of Cincinnati, Ohio, will

display an assortment of their high grade engineering specialties which are especially adaptable for textile mill power plant use. Representatives of the compnay will be in attendance at the show to explain the advantages of Lunkenheimer equipment.

The Monroe Calculating Machine Company with general offices in the Woolworth Building, New York City, and factory at Orange, N. J., will have an interesting display of the calculating-adding machine manufactured by them. This machine not only adds, but subtracts, divides and multiplies, and occupies less than a square foot of desk space. Demonstrating representatives will be present at this exhibit and the visitors from the mills may test the speed and accuracy of the machine by submitting some of their local problems to the demonstrators. The ease, speed, and accuracy with which the answers will be returned to them will be a surprise and a pleasure.

The Permutit Company, New York City, manufacturers of "Permutit" water softening filters and water rectification apparatus, are preparing an interesting exhibit. In addition to any apparatus which they may decide to show, they will also display various samples of the synthetic exchange silicates, "Permutit" brand, and many photographs of representative "Permutit" installations in the textile industry. A special feature of interest to textile and dyehouse men is always a demonstrating equipment by means of which samples of water may be tested showing the different degrees of hardness. Southern Representative C. C. Harding will be present to explain and demonstrate the process.

The Frank Mossberg Company of Attleboro, Mass., will show their new line of indestructible warp beam heads made from pressed steel. This is a new development in beam head construction that is light in weight and unbreakable. A. A. Underwood, from the factory, will probably be in charge of the exhibit.

LEWIS W. THOMASON.

The New York and New Jersey Lubricant Company, 165 Broadway, New York City, will exhibit their well known "Non-Fluid Oils" for use in textile mills. This company always presents a very attractive exhibit and it will, this year, be in charge of their well known southern agent, Lewis W. Thomason. Representatives from the New York office will also no doubt be in attendance.

The Normalair Company of Winston-Salem, N. C., will display a Normalair humidifier standard unit, probably in operation. This exhibit will no doubt be in charge of F. F. Bahnson, the company's engineer, assisted by other representatives of the company.

The J. A. Piper Roofing Company of Greenville, S. C., manufacturers of gravel, tin, slate, or tile roofing, and also makers of slasher hoods and cotton piping, will present an exhibit that will doubtless consist largely of photographs of installations made by them. Examples of their work will also be shown.

The New York Revolving Portable Elevator Company, 344-352 Garfield Ave., Jersey City, N. J., will show a demonstrating exhibit of the "Revolvator." This machine consists of two uprights or elevator guides, an elevator platform, and a revolving base which can spin around on its own center like a turn table. It is really a portable elevator. These machines are manufactured to operate by electric motor and also by hand power.

A. G. SANDERS.

J. D. Collins, 927 Grant Building, Atlanta, Ga., special sales engineer in conveying and storing equipment for warehouse purposes,will for the first time have an opportunity to meet with the members of the Southern Textile Association and present a display at space 319 of the specialties handled by him. The principal feature of the exhibit will be an Economy Tiering Machine for piling heavy bales and cases. This will be one of the hand driven type although the same machine can be furnished with a motor attachment that may be attached to any source of electrical supply. An illustration of one of these electrically driven Economy machines operating at the Riverside Mills, Augusta, Ga., may be found on another page of this issue in that section headed "What the Southern Mills Are Doing." Another feature of this exhibit will be Berger steel lockers for the use of cotton mill or other employees. This exhibit will be in charge of A. G. Sanders, who is an expert in conveying and storing equipment. Mr. J. D. Collins will also be present a part of the time and either of these gentlemen will be glad to render expert advice on storage or transportation questions.

The Veeder Manufacturing Company of Hartford, Conn., will show a complete line of Veeder products, which not only includes all varieties of counters but also fine die castings. Particular attention will be drawn to their textile products, including the loom pick counter, which has been designed especially for attachment to looms and is intended to be driven by the crankshaft. The mechanism in the interior of this counter is thoroughly enclosed in a dust proof case. There are no springs, and the reduction in speed is accomplished by means of worm gearing in an oil pocket. The hank counter which is another specialty made by this company, is claimed to have the advantage over counters having a dial and hands like a clock, in that it can be easily read by anyone even though they are not familiar with counters and, consequently, mistakes and disputes avoided. This hank counter is designed for use on roving frames, drawing frames, ring frames, mules, etc., however, it is suitable for many other machines where it is required to register the number of hanks passing over the front roll. They have developed a new loom counter, also a hank counter. Both of these instruments have larger figures and are of heavier construction than before. Their previous instruments were giving universal satisfaction and service, but it is the policy of this company to improve any of their products whenever it is possible so that

they will give unlimited service. Their many other specialties will be shown and this interesting exhibit will be in charge of W. C. Waldo, manager of the Textile Counter Department of the Veeder factory.

The Ware Shoals Manufacturing Company of Ware Shoals, S. C., have a space in which will probably be shown a variety of textiles manufactured by this company.

The Whitlock Coil Pipe Company of Hartford, Conn., will display specialties of their manufacture in the space which they have reserved.

The Pittsburgh Plate Glass Company, through its Atlanta office, will have an exhibit consisting largely of paints.

The Detroit Steel Products Co., of Detroit, Mich., will display "Fenestra" steel sash and other specialties made by them. J. Mac. Rabb, of Greenville, their southern representative, will be in charge.

JAMES E. PHILLIPS

E. C. Atkins & Co., Inc., manufacturers of saws and other metal cutting equpiment, with factories located at Indianapolis, Ind., Hamilton, Ontario, and Lancaster, N. Y., will show a full line of Atkins "Kwik-Kut" metal cutting machines, A A A hack saw blades and frames, circular saws used for cutting metal, silver steel band and circular saws and other specialties of their manufacture. The exhibit will be under charge of James E. Phillips of the Atlanta branch of the company.

The American Blower Company of Detroit, Mich., manufacturers of the "Sirocco" blowers, self-oiling vertical engines and similar equipment have provided an interesting exhibit. Representatives of the company will be in attendance.

The Cement Products Company of Wilmington, N. C., will have an exhibit showing a complete line of their "Sanisep" sewage disposal systems. The exhibit will consist of the various size concrete septic tanks manufactured by them for use both with and without running water. There will also be on exhibition a model knocked-down closet manufactured by them, which is used in connection with their septic closet tanks when installed in industrial villages. This company has equipped a large number of the more prominent cotton mills and coal mines in the eastern part of the country with their two tank "Sanisep" system, and have also supplied many individual customers. The system seems to be giving very satisfactory results wherever installed, as evidenced by the large number of repeat orders received. The Cement Products Company has always exhibited at the exposition and many prospective purchasers, who have the welfare of their operatives at heart will, as usual, be interested in looking over their exhibit. They will occupy spaces 112 and 113, and the exhibit will be in charge of one of their representatives, G. L. Lilliard, and some members of the firm from the head offices at Wilmington, N. C., will be in attendance.

J. A. SWANTON.

The exhibit of Chicago Fuse Manufacturing Company, 1014 West Congress street, Chicago, will be under the supervision of the district manager of that company, J. A. Swanton, whose headquarters are in Birmingham. Mr. Swanton is a very well known, and equally well liked member of the electrical trade in this territory having been connected with various construction companies and electrical supply houses for the past fifteen years, and is one of the best posted men in the electrical game in this part of the country. Mr. Swanton covers a large and important territory for his company, having under his jurisdiction North and South Carolina, Georgia, Alabama and Florida, as well as eastern Tennessee and southern Mississippi and Louisiana. He is a genial, pleasant gentleman, and if there be any visitors to the convention, who are not acquainted with him, they would unquestionably find it to their advantage to look him up at space No. 311 and make his acquaintance for they would find it worth their while to do so.

The Page Steel & Wire Company of Adrian, Mich., will have an exhibit of their products under the charge of H. P. Hoffman. This exhibit will show various examples of the Page chain link factory protection fence equipped with barbed wires on "T" bars, also the same fence in a standard angle iron construction where a single piece of angle iron acts as the post and also carries the barbed wire at the top. Page chain link partitions for interior use will also be shown as well as many examples of their construction and use. This company also manufactures a material for window guards, machinery guards, and numerous other purposes.

J. R. Regnas & Company of Atlanta, Ga., will doubtless show a number of the Acme steel goods products for which they are the southern representatives, and also gummed slasher tape and suitable moisteners for cotton mill use. This exhibit will probably be in charge of Mr. Regnas.

The S. K. F. Ball Bearing Company of Hartford, Conn., will have an exhibit probably in charge of their southern representative in which they will show S. K. F. ball bearings in various positions on cotton mill machinery and explain the advantages to be obtained thereby.

The Scandinavia Belting Company of Atlanta, Ga., will present an exhibit of belting for textile mill use.

The Sherwin-Williams Company of Newark, N. J., will have a good representation, displaying their paints and dyes.

W. A. Seybt of Greenville, S. C., has reserved space in which to display the products which he represents.

Signode System, Inc., with southern warehouse and office at 40 Gordon Place, Atlanta, Ga., will have an exhibit in charge of Southern Manager Alvin Lovingood, at which will be demonstrated the advantages of their products for baling cotton goods.

The Terrell Machine Company of Charlotte, N. C., manufacturers of "Ideal" quill-cleaning machines and housings for ball bearings, will have on exhibit some of their quill-cleaning equipment. These will include a single end type and a double end machine, the latter having about twice the capacity of a single end machine. This exhibit will be in charge of representatives from the factory.

The U. S. Gutta Percha Paint Company of Providence, R. I., manufacturers of "Rice's" mill white paint, will have an exhibit where examples of this material applied to various objects may be seen. This exhibit will doubtless be in charge of the southern representative.

The Victor Shaw Ring Traveler Company of Providence, R. I., will have their usual interesting exhibit in charge of the southern representative, A. B. Carter, of Greenville.

The American Scrubbing Machinery Company, of Chicago, Ill., will have an exhibit of the products which they manufacture.

Curtis & Marble Machine Works, Worcester, Mass., manufacturers of all kinds of cloth room machinery and equipment, will display some of their special products in an exhibit that will doubtless be in charge of a representative from the factory.

The Edison Lamp Works of the General Electric Co., will place an exhibit through the Atlanta office of the company. It is possible that Harry Roberts of the mill power department will be present in connection with this exhibit and probably other representatives.

The Goulds Manufacturing Company of Seneca Falls, N. Y., will have an exhibit at the show in charge of Isaac Hardeman, the Charlotte, N. C., representative of the company. In this exhibit will be shown single- and multi-stage centrifugal pumps, triplex pumps and a special new high speed water supply pump all of which are manufactured by the Goulds Company.

Henry Hackney of Charlotte, N. C., has reserved space for plumbing products in which he is interested.

The Northern Equipment Company of Erie, Pa., will have an exhibit in the charge of their Charlotte office where they will display their well known feed water regulators and other specialties.

The Otis Elevator Company of Pittsburgh, Pa., will exhibit through its Atlanta branch the various parts of their products in such a manner as to fully illustrate their uses and will have present an experienced man to explain the advantages of the Otis elevator. One of the features will be a controller parts cabinet, while another will be a standard elevator mechanism in operation without the platform section. Their slogan is "Otis, the world's word for elevtor safety." It is probable that this exhibit will be in charge of W. D. Hoffman, manager of the Atlanta branch of this company, assisted by representatives from his and other departments.

The Belmont Iron Works, Greenville, S. C., will have on display samples of their products in charge of suitable representatives.

The Southern States Supply Company of Columbia, S. C., will display a number of mill supplies and specialties handled by them from their Columbia headquarters.

The Southern Textile Machinery Company of Greenville, S. C., dealers in new and used cotton mill machinery, power plant equipment and electrical apparatus, will display some of the equipment for which they are selling agents. Representatives of the company will be in charge of this exhibit.

F. C. MYERS.

The Baker R. & L. Company of Cleveland, Ohio, the manufacturers of the well known industrial trucks and tractors have prepared a most interesting and instructive exhibit for the Southern Textile Exposition. This exhibit will be under the charge of D. L. Darnell, assistant sales manager from the Celveland office and F. C. Myers, district manager from the Atlanta office. The Baker R. & L. Company are prepared to give expert advice on material handling in the textile industry. Mr. Myers has had an extended experience in electric handling methods, having been special investigator for the Society for Electrical Development in New York City for several years. This exhibit will also be accompanied by H. B. Grieg, of the Engineering Development Department of the Baker R. & L. Company, who is an expert demonstrator. Visitors at the Greenville exposition will find competent and intelligent advice on interdepartmental haulage problems at the booth of the Baker R. & L. Company.

The U. S. Ring Traveler Company of Providence, R. I., will have a display of their products in a suitable space which they have reserved.

The F. H. Thomas Company, 689-691 Boylston St., Boston, Mass., will display hospital furniture, first aid room furniture and equipment, surgical supplies and other life saving specialties. An experienced representative of this company will be present to explain and demonstrate the high-class equipment presented in this exhibit.

S. F. Bowser & Company of Fort Wayne, Ind., will show their lines of oil cabinets and oil handling apparatus especially designed for mill use.

The Sarco Company, Inc., Woolworth Bldg., New York City, manufacturers of "Sarco" steam traps and temperature regulators, will have an exhibit in charge of Mr. E. J. Ritchie. Mr. Ritchie was educated at the Toronto Technical School and in the Engineering School of the University of Toronto. He has been employed on the technical staff of the Sarco Company since 1913 and is an expert in the practically new science of temperature control.

The Swan & Finch Co., of New York, who are producers of lubricants for the scientific lubrication of textile machinery, will display various grades of "Slo-Flo" and "Cupese" which are suited to the needs of textile machinery lubrication. Among this assortment will be found Cupese No. 92 for twister ring lubrication; Cupese No. 72 for bearings where severe conditions must be met, such as on high speed machinery, etc.; Cupese No. 54 for general grease cup use; Slo-Flo No. 29 for ball and roller bearing equipment; Slo-Flo No. 30 for knitting machines; Slo-Flo

No. 35, a white lubricant for looms where stainless conconditions are important factors, etc. A number of representatives of this company will be present to aid in the explanation and demonstration of their lubricants.

The National Marking Machine Co., 1068 Gilbert Ave., Cincinnati, Ohio, will exhibit their improved No. 8 National power marking machine and their Model H-3 marking machine. These highly efficient marking devices are speedy, neat and clean cut. They mark indelibly and can be successfully operated by untrained employes. Especially adapted for use in cotton mills, finishing plants, mill village laundries, knitting mills, etc. National "Special" inks will also be shown and demonstrated by those in attendance. Ask for your copy of the booklet entitled "Better Marking."

The Kaustine Sales & Service Co., of Atlanta, who represent the Kaustine Company. Inc., of Buffalo, N. Y., in the South, will have representatives present to explain the Kaustine System and its advantages. The exhibit will be in charge of A. M. Whelpley, the southern sales manager.

W. S. PETTY.

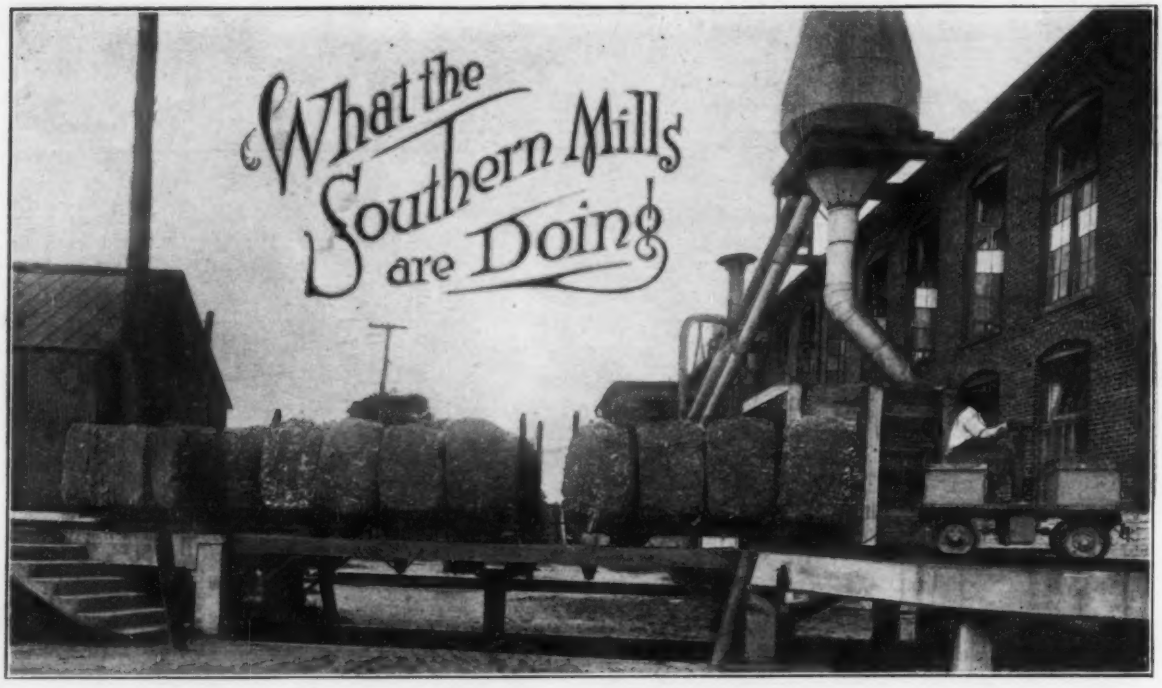
H. G. Mayer and W. S. Petty will be in charge of the exhibit of The American Laundry Machinery Company of Cincinnati, Ohio. Mr. Mayer is well known to the majority of the mill owners in the South, having created a wide circle of friends through his selling machinery to the textile trade. He and Mr. Petty have made an intensive study of mill village conditions and are in a position to intelligently advise on these matters. They will be glad to give those interested, the benefit of their experince. Mr. Petty is a laundryman of high caliber, having had charge of some of the largest plants in the country. The exhibit will consist of a unit control, motor driven, Acme Wood washer and an Advance, tilting type, universal press. There will also be photographs and blue prints of American mill village laundry installations. The American Laundry Machinery Company claim to have been the first in the field with machinery of this kind for textile mills and they have made a thorough study of the needs of mill owners. The machines they manufacture expressly for the textile mills are: American Rotary Hosiery Press, Automatic Underwear Press, Underwear Finishing Press, Knit Goods Ironer, American Rotary Dyeing and Fulling Machines, Overdriven Extractors, and Textile Dryers. Mr. Mayer and Mr. Petty will be glad to talk over the special needs of any mill owner.

The C. J. Tagliabue Mfg. Co., Brooklyn, N. Y., manufacturers of indicating, recording and controlling devices for the textile industry, will have an interesting exhibit occupying spaces 230-233 inclusive. Their exhibit will include "Tag" self-operating temperature controllers for automatically regulating the steam inlet valves to size boxes, dye kettles, etc.; also a device for automatically controlling both the time and temperature elements of various important textile processes; indicating thermometers, etc. Broken ends and chafing on the looms represent five distinct losses —yarn, time of the operator, size, steam and labor of the slasher-tenders—and in the average mill these combined losses aggregate a goodly sum each year. These are due to two causes—the improper cooking of the "size" mixture and its application to the yarn. These unsatisfactory conditions are the direct result of the fluctuating temperatures which prevail within the size kettles and boxes when the steam inlet valves are operated by well-meaning but humanly fallible hands. The "Tag" controller constantly maintains a uniform temperature because it automatically responds to the slightest tendency toward a temperature change within the size kettles and boxes. Perfectly sized and uniform warps with a minimum of broken ends and chafing on the looms is thus achieved. A typical installation of this self-paying controller applied to a size box may be seen at the "Tag" booth, also a similar self-operating temperature controller applied to a dye kettle. The "Tag" exhibit will be in charge of V. Wichum, chief engineer of the C. J. Tagliabue Mfg. Company. Mr. Wichum has been associated with this company for many years and previous to his present incumbency, had charge of the Boston branch. He is well-known among the numerous New England textile mills, having specialized to a large extent on this industry. Mr. Wichum is therefore thoroughly qualified to suggest a solution for the various temperature problems encountered in the textile field, and will be ably assisted by B. O. Pallin, another Tagliabue temperature engineer of broad experience.

The exhibit of the Electro Bleaching Gas Company, 18 East 41st Street, New York City, pioneers and leading manufacturers of "Liquid Chlorine" for commercial purposes, will be attractive and interesting. It will be in charge of James B. Duggan, who has represented the company as their expert demonstrator in the textile field ever since its organization. The exhibit will show cylinders of "Liquid Chlorine" of 100 pounds and 150 pounds capacity as shipped from the plant of the company at Niagara Falls, New York, to the mill owner to use for bleaching purposes. There will also be a complete and interesting display of raw and finished bleached textiles, principally hosiery. The E. B. G. brand "Liquid Chlorine" is widely known as "the 100% bleach" and visitors at the exposition are invited to arrange with Mr. Duggan for a free demonstration at their mills.

The National Lamp Works of the G. E. Company, of Cleveland, Ohio, will have an exhibit in charge of Ward Harrison, illuminating engineer from this plant.

The U. S. Ball Bearing Mfg. Co., of Chicago, makers of the well known "Strom" bearings, have secured some desirable spaces for their educational exhibit, which will be in charge of F. V. L. (Ball Bearing Alphabet) Smith, their southern representative.



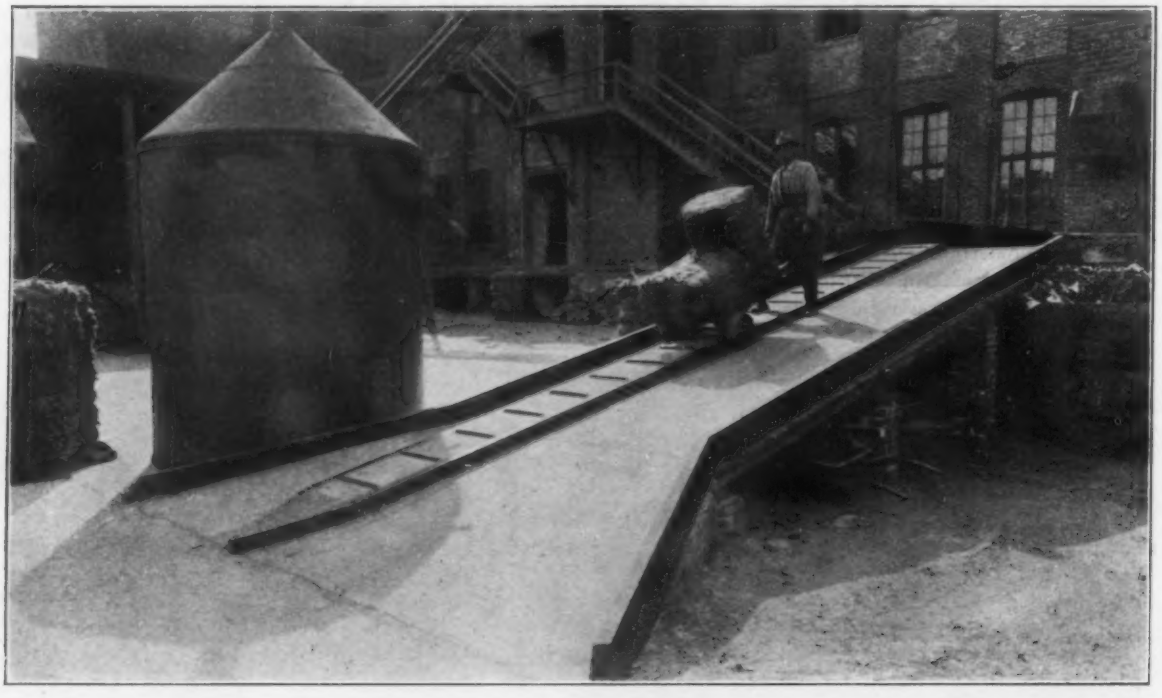
Electric Tractor Hauling 800-Pound Bales of Waste at the Riverside Mills, Augusta, Ga. Note the Concrete Platform and Hydraulic Bridge Over Roadway. Bridge Lowers to Roadway When Teams Pass. Also Note Type of Labor Employed in Driving Tractor.

From time to time attention has been called in this and other sections of Cotton's pages to the fact that southern cotton manufacturers are keeping fully abreast with the times in the use of labor saving machinery and equipment. As the cost of labor has risen during the past few years, so and in like proportion has the interest of the tetxile mill manager quickened. It is, therefore, with a feeling of pride in what the southern mills are doing that we can call especial attention to the accompanying illustrations which are reproductions of photographs made at the Riverside Mills at Augusta, Ga. Not only do these illustrations depict a number of ways in which mills may save labor, but it is also of interest to note the quality of labor used to operate these devices—and this is an important point with all purchasers of special equipment, as if it should become necessary to employ trained men to operate such equipment, the labor saving qualities are frequently destroyed.

At a called meeting of the Cotton Manufacturers Association of Georgia, held at the Piedmont Hotel, Atlanta, on April 8th, many questions of interest were taken up for discussion. It was found that the majority of mills represented were curtailing production because of a lack of orders sufficient to keep the mills employed full time. The opinion was also expressed that it would be foolish for

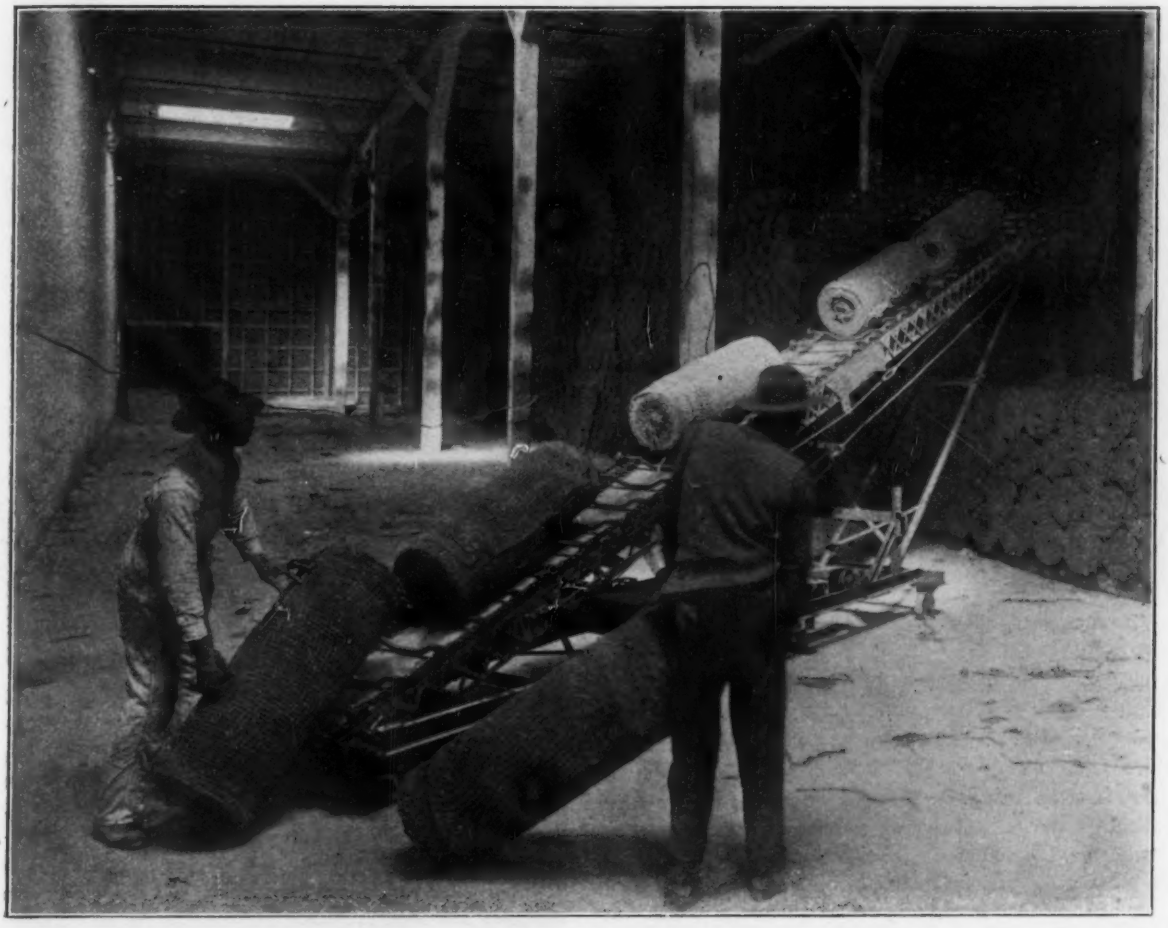
Making a Sharp Turn With Tractor and Trailers. Concrete Platform 14 Feet Wide. Bales Weigh 800 Pounds Each.

Escalator Lifting Loaded Trucks to the Second Floor at the Riverside Mills, Augusta, Ga. It is Driven Through a Clutch and Belts From the Main Line Shaft, and is Started and Stopped by the Rod Seen Next to the Wall. Note Also Concrete Platform and Ramp.



Coming Down an Incline With a Load of Waste. Braking Effect is Obtained by Cramping the Wheels Against the Steel Sides of the Raised Section, or by Lowering the Handles so the Blocks on the Truck Bear on the Safety Treads. Note Concrete Ramp and Yard.

manufacturers to produce goods at the present high prices for the purposes of filling warehouses only, as a large quantity of goods on hand would necessarily militate against the mill operator in his attempt to secure a reasonable price for his goods. While no action of any kind was taken on the matter, it seemed to be the consensus of opinion of the majority of manufacturers present to stand in favor of a fifty-five hour basic week when business again



Four Men Doing the Work of a Dozen and Doing It Quicker. Stacking 100-Pound Rolls of Bagging at the Riverside Mills, Augusta, Ga., Using an Electric Inclined Portable Elevator and Taking Current From a Lamp Socket.

becomes good enough to warrant working that many hours weekly. While reports to some of the daily papers indicated that a definite action on this question had been taken, such reports were in error.

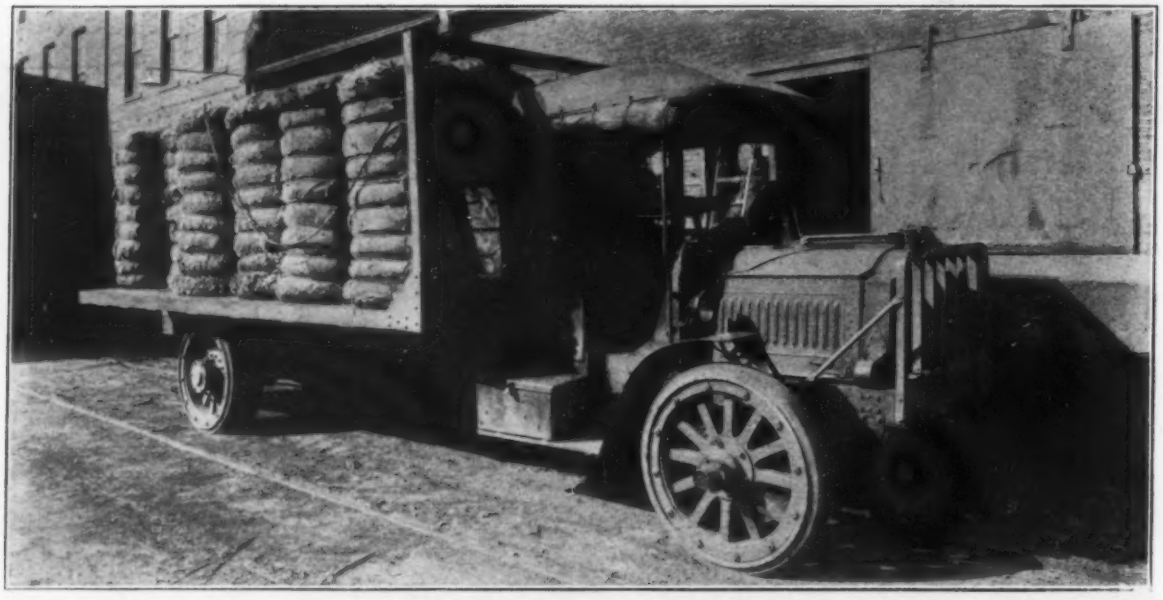
The plant of the John E. Smith Cotton Manufacturing Company, Thomson, Ga., was sold early in April to the Couch Manufacturing Company, Atlanta, Ga. The mill was owned by the Neals of Macon, and a few men in Thomson. It is equipped with 10,000 spindles and 260 looms and manufactured duck. The purchase price is reported as being $100,000. The mill is taken over by the Beaver Cotton Mills, which were organized with a capital stock of $400,000 on April 8th, 1919, with main offices in Atlanta, Ga. The new corporation will enlarge and make many improvements at the mill plant. The stockholders met in Atlanta, Ga., and elected the following directors: W. D. Couch, A. G. Couch and George Beveridge, of Couch Brothers Mfg. Co., East Point, Ga.; J. R. Killian, Atlanta, Ga.; L. J. Powers, Waterloo, Iowa, and A. H. Benfield, New York. The directors, in turn, elected the following officers: W. D. Couch, president, East Point, Ga.; A. G. Couch, treasurer, East Point, Ga.; George Beveridge, vice-president, East Point, Ga.; J. R. Killian, general manager, Thomson, Ga.

Grady Rankin and associates, of Gastonia, have organized a new mill company with a capital stock of $150,000, all of which has been paid in. It is not yet known what the name of the new company will be. They will erect a 5,000 spindle yarn mill.

The McNally Cotton Company, Union, S. C., cotton and fertilizers, contemplates the erection of a twine mill.

The Pacific Mills (Hampton Department), Columbia, S. C., are making many improvements around the mills. New houses are being built in the village, other houses are being repainted and a number of new streets and concrete sidewalks are being laid out.

The Laurens Cotton Mill Company, Laurens, S. C., has entered upon a rebuilding program. Every employe's cottage in the village is to be dismantled and new ones erected. The dismantling is now in progress. The entire village is to be re-located in so far as streets and buildings are concerned. A different type of cottage for the operatives will be built, but it is not stated if they are to be uniform size. Every new cottage will be equipped with water and sewage connections. Arrangements for the furnishing of water is to be made with the city which is expected to extend its main lines through the village. It will be a tremendous improvement and when completed the Laurens Cotton Mills will have one of the most attractive villages in the state. It is probable that the Holmes Methodist church



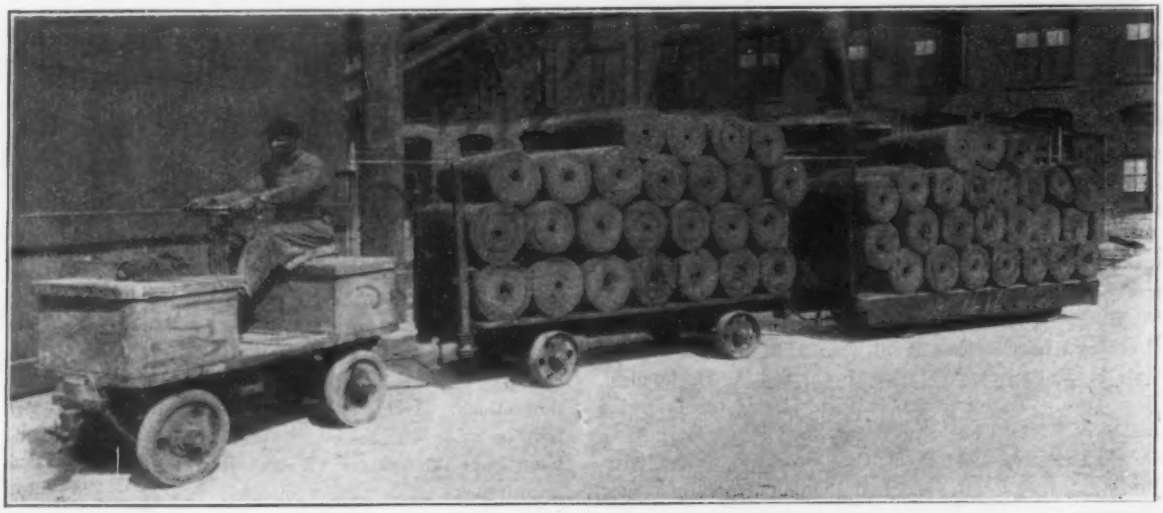
OUTSIDE HAULAGE AT THE RIVERSIDE MILLS IS HANDLED BY A 5-TON PACKARD TRUCK. TWELVE 800-POUND BALES OF WASTE IS THE LOAD SEEN IN THE PICTURE.

which was burned a few weeks ago, will be rebuilt along with the new building program and it may be located on another site, though this has not been fully decided upon. The Laurens Mill Company's plant is located on a 128 acre tract and the grounds are ample for the contemplated improvement in rearranging streets and houses. In all there are 195 cottages. It may be that fewer than this number will be rebuilt as it is proposed that a large number of them shall have an increased number of rooms. An expert in laying out the village will probably be employed for the work of rebuilding the little city.

The Drayton Mills, Spartanburg, S. C., recently awarded contract to the Fiske-Carter Construction Company, of Greenville, S. C., to erect a community building at the Drayton Mill village. The building will be as follows: 41x110.4 feet with "L" 36.6x41 feet, 2 stories and basement with brick walls and wood frame, slate roof and wood floors. Construction has begun. Frank C. Collins, Spartanburg, S. C., is the architect.

Mill No. 8, recently mentioned as to be built by the Marlboro Cotton Mills, McColl, S. C., will have 50 looms. The building is now being erected. Robert & Co., of Atlanta, are the architect-engineers.

Louisville, Ky., is to have a new textile industry, a company has been organized to manufacture marquisettes and lace curtains. The company will occupy a local mill building of about 20,000 square feet of floor space and will give employment to about 60 skilled operatives. The paid in capital stock is to be $30,000 and Benjamin A. Forster, of Connecticut, is the general manager. Twenty looms with a dyeing and bleaching plant are to comprise the initial installation of equipment. The Louisville Textile Co.



TRACTOR HAULING 50 ROLLS OF BAGGING WEIGHING 100 POUNDS EACH. NOTE TWO TYPES OF TRAILERS USED.

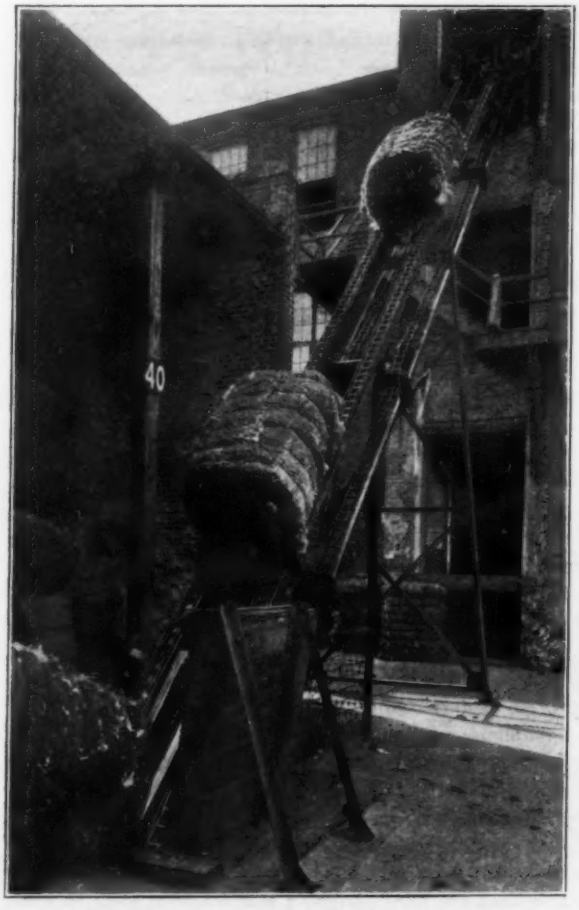
will be the name under which the mill operates. Associated with Mr. Forster are C. N. Poore, Philip S. Tuley and Thomas S. Tuley. Mr. Philip Tuley is president and treasurer of the Louisville Cotton Mills Co.

The Pauline Mills, Kings Mountain, N. C., have recently added to their equipment 24 dobby looms, 51 jacquards, 17 spinning frames, 1 spooler, 1 warping machine, 7 cards, 2 drawing frames and 4 speeders, it is reported.

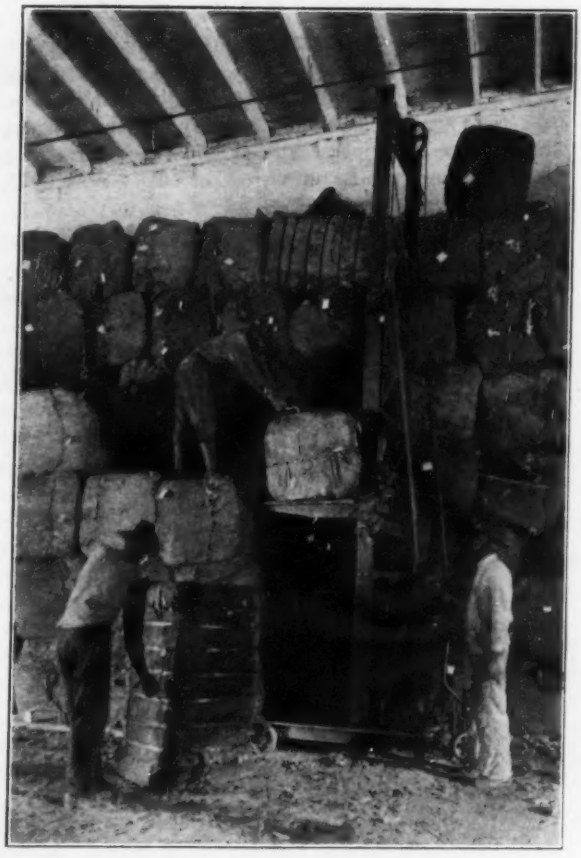
Equipment is now on hand and is being installed at the plant of the new Alexander Manufacturing Co., Forest City, N. C., whose building was completed a few weeks ago. The pickers, several cards, slubbers and intermediates are in operation and some of the spinning machines will be running in the immediate future. Hosiery yarns are to be spun on cones for knitters, and in sizes ranging from 22s to 32s. There are to be 10,000 spindles. J. R. Moore is secretary and treasurer with J. F. Alexander, president of this new mill.

The Mary Lelia Cotton Mills, Greensboro, Ga., have recently installed four new spinning frames and a new warper. A shipment of looms and a new engine are expected shortly.

The Armstrong Cotton Mills Co., Gastonia, N. C., is having a new humidifying system installed. The new system is from the Parks-Cramer Co., Charlotte, N. C., and Fitchburg, Mass.



BALES OF WASTE WEIGHING 800 POUNDS LIFTED TO THE THIRD STORY AT THE RIVERSIDE MILLS, AUGUSTA, GA., BY USING A PERMANENTLY INSTALLED INCLINED ELEVATOR DRIVEN BY AN ELECTRIC MOTOR.



ELECTRICALLY DRIVEN PORTABLE ELEVATOR TIERING 800-POUND BALES OF WASTE AT THE RIVERSIDE MILLS, AUGUSTA, GA. THE NECESSARY CURRENT IS TAKEN FROM A LAMP SOCKET.

The Belmont Cotton Mill, Shelby, N. C., is completing an addition to its plant and installing the following additional new machinery: eleven spinning frames, two pickers, four cards, three spoolers, two twisters. New flooring is being laid throughout the mill and sanitary drinking water equipment is being installed.

The Miller Cotton Mills Company, which has been organized with a capital stock of $500,000, as reported in a previous number, will not be located at Dallas, Texas, as was at first reported, but has purchased a site at Waco, Texas, and will build its mill for manufacturing at that place. The officers are as follows: Bryon Mill, of Kansas City, president; R. W. Higginbotham, Dallas, Texas, vice-president; and E. R. Nash, Waco, secretary and treasurer.

The Beaver Duck Mills, of Greenville, S. C., are to improve the grounds in the village around its mill and has built a number of new cottages, while all the old cottages have been remodeled and painted inside and out.

William Leslie Melton, of Birmingham, has the prepared plans for the Profile Cotton Mills, at Jacksonville, Ala., for a hospital to contain twenty beds and cost $10,000. This mill also plans to erect a brick veneer office building which will cost approximately $5,000.

New England Mill Situation.

Production has been increased in this section during the past month following a recovery in the cloth markets. Operations are still much under capacity, in some instances being as low as 70 per cent. The finishing plants as a whole are now running an average of 50 per cent which is a considerable gain. There are a few that have increased their output to within 20 per cent of capacity, but they are exceptional. Labor troubles have been kept down, save in the conspicuous instance of Lawrence, Mass., where troubles have been intermittent since February 1.

The mills in this section have virtually adopted a 48-hour week with 48 hours' pay. Many mills are actually not operating more than 44 hours and some are running but four days a week. In the first part of the month some mills that were affected by strikes in February were still idle, the Cabot in Maine, and the Everett in Massachusetts being examples. In Fall River, where some troubles started in the American Printing Company's mills, differences were settled and the mills all resumed work in the first week in April. Because of the lack of desire to press wage matters to a stage of controversy, it was possible to compose many incipient difficulties with operatives, and on the whole, it is the fact that after-war troubles have thus far been far less than anyone anticipated.

The most serious difficulty mills have had have been those arising from the slow adjustment of war contracts and the still slower recovery from falling prices, cancellation of civilian orders, and lack of confidence on the part of the country's jobbing and converting trades. At this time it seems safe to say that the worst is over in these matters, and certainly, it is nothing short of the truth to say that cotton manufacturers believe the worst has passed and they are more optimistic about the future than they have been since the middle of November. They do not now look for a recovery of war time prices, but do not expect any greater decline in the next six months than has already taken place.

The fine goods section of the industry continues less satisfactory than other divisions. Mills have resisted declines more firmly and have been content to shut down more looms than has been true of mills making coarser fabrics. The recovery seen thus far in the fine goods industry has been principally in shirting and plain fabrics. Fancy business on voiles, and dress materials, has been tendered more freely by converters in the past month, as it has become necessary to do some sampling for the spring season of 1920. The mills have not invited the business in consequence of the low priced views of the converting trade. They began to change a little after the first of April but are not yet well fixed on any high plane.

The converters of fine and fancy goods have been holding many conferences with finishers trying to arrive at some understanding whereby finishing prices will be guaranteed against a decline, or whereby substantial reductions in war time prices for finishing will be made. At one of these meetings in New York, all the New England finishers were represented and it was pointed out that there had been no change in the labor costs since the armistice and very trifling changes in the costs of dyes, chemicals, starches, drugs, and the other factors that enter into finishing charges. The elements that gave rise to the decline in cloth were not present in finishing, they contended, hence converters could expect no great reductions in charges for some time.

Despite this statement of the situation, the fact is that business is slowly accumulating at the finishing works and bleacheries, and some price concessions are being made to induce the new business. Plants that were running 40 per cent in March were running 65 per cent toward the middle of April. The printing end of the business was improving faster than either dyeing or bleaching. Piece dyeing was better than specialty dyeing in either yarns or cloths.

Print cloth markets are higher and more active and sales made for contract deliveries in April, May and June, have been larger than any made since the armistice. The 38½ inch 64 x 60 standards that fell to 8½c had risen by April 10 to 10¼c, and the 39 inch 68 x 72s to 11½c. The printers of percales and narrow prints have done a much better business. Percales were reduced from the opening price of 15c for 4-4 64 x 60s to 13c, and the lower price induced a very considerable trade. The reduction was brought about by offerings by converters of the same constructions at prices 1½c lower than the opening figures of the large printing corporations.

Bleached goods markets have been better and prices are firmer. Fruit of the Loom 4-4 goods were reduced to 19½ from 21½c and then advanced ½c to 20c. At this figure sufficient business was booked to warrant holding the last price till June 1. Lonsdales, Hopes, and other well known brands were revised. Wide sheetings were reduced to a basis of 60c for 10-4 Pequots, which was 5c a yard lower than the first reductions made after the armistice. Pillow tubings, sheets and pillow cases, were also revised downward but they have all become firmer following a larger volume of new business.

The gingham markets have not followed the course of southern staple ginghams. The new lines of fall ginghams were offered at slight concessions from the last prices and some of the leading lines were fully taken by the jobbing and manufacturing trades. The fall lines are not large in volume as a rule. Eastern staple ginghams were reduced to 15c a yard from 17½c. The southern lines of similar constructions had previously been dropped to 11½c. The market seems better disposed toward wide dress ginghams than toward staples and eastern mills have not been making many of the latter. They furnish check patterns in nearly all of their finer lines and that seems to meet the needs of the trade formerly accustomed to use the coarse checks in apron ginghams.

Romper cloths, shirting chambrays, and other yarn dyed staples have sold better, relatively, than many of the printed and bleached cottons and the yarn dyed mills as a whole have not accumulated stocks. The shirting lines have attracted a fair amount of attention. Many fine lines have been reinstated for fall and spring and many new lines are being shown in samples from week to week. There are hopes that the shirting business will improve steadily with the advent of more of the soldiers and with a return to general peace conditions. Novelty wash fabrics in yarn dyed effects are much wanted in the markets

for spot delivery but they are not being ordered well for another season.

Business on tickings, denims, and other heavy colored cottons has been comparatively light. The very low prices named in the markets have not been attractive to the mills in this section and they have passed orders rather than meet many of the low figures. The denim and ticking markets are slowly improving as to the volume of goods wanted and ultimately more of this business is looked for. One of the best divisions in the trade has been tire cloths and tire cloth yarns. The automobile trades have been better buyers as a rule than almost any other division of industry using cotton goods and some very large tire yarn business has been booked.

A month ago the narrow domet situation was badly mixed owing to the many price reductions made from the openings in January. During the month the Amoskeag Company reduced prices from 20c to 15c on its leading number of narrow domets, and correspondingly on all its other lines. This caused something of a shock in the markets. It had been forecast by the frequent nibbling at prices by smaller competitors in their efforts to secure business in a dull market when jobbers utterly lacked confidence in prices of any kind. Since the new prices were named business has flowed in more steadily. The wider cloths have been pretty well sold ahead and the volume of narrow business is now sufficient to take care of the limited summer output.

The mills making bedspreads and towels of a fancy character have not been able to get business in any satisfactory volume. Mills and agents are overstocked and some very high class qualities of spreads have been offered at lower poundage prices than many of the coarse brown sheetings have brought. The larger manufacturers decided about the first of April to meet the situation by guaranteeing prices till October 1 and this means protecting the customer against declines during the period of invoicing. Some of the towel mills making the finer qualities that are satisfactory substitutes for linens, and the few mills that make union goods, have found business good but many of the smaller factors in the trade have not done well.

The underwear trade has been generally poor. Prices have not been satisfactory to buyers. During the war underwear values in first hands were kept low by the policy of the government in controlling much of the staple output and setting a low value on it. Buyers for civilian purposes expected to secure immediate reductions on a parity with those secured by piece goods users, and failing to do so, they withdrew from the markets after ordering hardly 40 per cent of a normal fall business. This caused many of the mills to curtail their output. The yarn mills of this section have been lacking in business except on tire yarns and a few of the special yarns used in lace curtain production, or for cotton worsteds, and recovery in that division has been decidedly slow.

News from machinery concerns indicates a slow revival of business. It is stated that concerns have plenty of orders they can accept if they care to risk prices. Some concerns have large orders booked but are unwilling to maintain the abnormally high wage conditions forced upon them in war times by the proximity of munition plants and the great demand for machinists. Rather than accumulate any machinery not wanted at any price, many machinery concerns prefer to run on short hour schedules while labor is finding itself.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, April 12th, 1919.

The tendency of the market is to higher levels again, a sharp rise having been experienced the past month, owing to trade conditions at home and abroad being gradually adjusted, because of unfavorable weather for preparing for the new crop, larger exports, some improvement in the spot demand and owing to confidence in early peace. When peace is signed a big advance is anticipated, if only temporary.

The demand for cotton goods in America is steadily improving, jobbers reporting more business for home account and for export, with prices tending higher for some descriptions.

Advices from England are bullish, which is reflected in larger sales of spot cotton there of late, due to more demand for goods from China and other parts of the world.

In the way of a reminder it may be repeated that stocks of raw cotton and cotton goods over seas are very light, in some countries virtually exhausted, and for these reasons it is expected that the demand for cloths and yarns will gradually broaden.

One month ago exports from the United States were only about 100,000 bales larger than to even date last year, today they are 366,000 in excess of shipments to corresponding date last season, 3,736,000 against 3,370,000.

Including last year's carry over in the interior the South has about 3,000,000 bales more to market than at this time one year ago, but there is no weakness at any point. On the contrary, holders offer sparingly, relying upon the decrease in acreage this year and early peace to bring about higher prices eventually. If this year's acreage is reduced about 15 per cent, it will mean an acreage of about 31,500,000 vs. 37,073,000, or the smallest acreage in over ten years.

The new crop is making an unfavorable start this year, for while there is a good season in the ground in Texas, preparations are backward, labor scarce and less fertilizer is being used.

In its first of weekly weather and crop reports of the season Washington summarized present conditions as follows: "Frequent rains during March delayed preparation of soil and planting of cotton in much of the belt, especially in central districts, and work at the end of the month was one to two weeks late. The first week in April was more favorable, particularly east of the Mississippi river, where planting of cotton progressed satisfactorily. To the westward, rains further delayed work in some locations. The stand of cotton is poor in Texas, where there are complaints that it is turning yellow.

Since the first weekly government report was issued last Wednesday the weather in the interior has been generally

unfavorable for agricultural interests. Rains were more or less general, especially in the Mississippi Valley States, where the precipitation at many points was excessive, and temperatures were too low in all districts for satisfactory germination of seed where already planted.

The things the trade have to reckon with in the near future are the possibilities of the continuance of unfavorable climatic conditions in the cotton region, such as the possibility of more rain and frost scares, which usually occur at the close of April, sometimes necessitating much replanting, and the probability of peace being signed at an early date.

After the peace treaty is signed, trading with enemy countries will likely be permitted under certain restrictions, and as it is with Central Europe, Austria and Germany, that the urgent demand for cotton goods and raw cotton is likely to develop, owners of spot cotton in the South will likely hold out for still higher prices for their product, so much of which enemy countries, as well as the rest of the world, needs badly. Therefore, offerings of spots, after peace is finally established, are likely to be scarce until the market reaches a level to induce holders to sell more freely.

Under the circumstances we favor buying, especially on important depressions, new crops preferred, as next season the world will probably be open to trade, and there is no telling but that another moderate, perhaps a short crop will be raised this year.

The Yarn Market.

The yarn situation showed some improvement during the last month from the standpoint of inquiries, but the price situation is still muddled. Knitters were desirous of securing carded hosiery yarn on a basis of 39 cents for 10s, and spinners reply that it is imposible for them to furnish yarn at that price, as with raw cotton conditions as they now are it costs the mills at least 40 cents to manufacure such yarn. There was also a better inquiry for two ply combed yarn, and on these yarns the dealers have advanced prices somewhat. Many buyers of yarn are figuring on some manufacturers having yarns in stock made from high priced cotton and with high priced labor, which they will have to close out at a loss, sooner or later, in order to release their money. While this may be true in some instances, it is also undoubtedly true that many jobbers and yarn buyers are going to find themselves holding the end of a mighty hot stick. Southern mills, particularly, are curtailing to a sufficient extent to protect themselves from just such practices. A New York State knitter is quoted as saying that he believed buyers of hosiery and underwear have overstayed their market and many spinners of yarn feel in a similar fashion toward the buyers of their products.

The prices of carded weaving yarns were advanced by the spinners but the sales were reported as made for lower figures than quoted. However, this was undoubtedly yarns in dealers' hands that an effort was being made to move. Many manufacturers of knitting yarns are looking forward with interest to meeting with many knitters at the annual convention of the National Association of Hosiery and Underwear Manufacturers early in June, where many heart-to-heart talks are annually held and frequently large orders carried home by the spinners.

Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

4s to 8s	38	@39	10s	39	@40½
12s	41	@41½	14s	41	@42
16s	42	@43	20s	44	@44½
24s	46½	@47	26s	49	@50
30s	56	@57			

Southern Single Warps.

8s	40	@40½	10s	42	@42½
12s	42½	@43	14s	42½	@43
16s	43	@43½	20s	44	@45
26s	48	@49	30s	57	@58
40s	68	@69			

Carpet and Upholstery Yarns in Skeins.

8-4 slack	37	@38	9-4 slack	39	
8-3-4 hard twist	33	@34			

Southern Two-Ply Skeins.

8s	39	@39½	10s	40	@40½
12s	41	@41½	14s	42½	@43
16s	43½	@44½	20s	45	@45½
24s	48	@49	26s	49	@50
30s	55	@56	40s	64	@65

Southern Two-Ply Warps.

8s	39½	@40	10s	40	@42½
12s	42½	@43	14s	43	@43½
16s	44	@45	20s	47	@48
24s	50	@51	26s	51	@52
30s	57		40s	65	@68

Two-Ply Combed Peeler Skeins.

20s	63	@65	24s	66	@67
30s	70	@73	40s	75	@78
50s	83	@85	60s	90	@95
80s	$1.20	@$1.25			

Southern Frame Spun Carded Yarns on Cones.

8s	38	@39	10s	39	@41
12s	40½	@41½	14s	41½	@42
16s	41½	@42	18s	42	@42½
20s	43	@43½	22s	42	@43
24s	44	@45	26s	46	@47
30s	48	@49	40s	65	@66
30s tying-in	46	@46½			

Northern Mule Spun Carded Yarn on Cones.

10s	46	@47	12s	47	@47½
14s	47	@48	16s	48	@48½
18s	49	@49½	20s	49½	@50
24s	51	@52	26s	53	@54
30s	56	@57	40s	68	@69

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	60	@61	12s	61	@62
14s	62	@63	16s	63	@64
18s	64	@65	20s	66	@68
22s	69	@70	26s	72	@73
30s	75	@76	36s	82	@83
40s	87	@88			

Lancashire Notes.

BY AN ENGLISH CORRESPONDENT.

There is great depression in the trade here and from all quarters come reports of idle machinery. In view of this, the retention by the government of the restrictions on exports is arousing a great deal of criticism. Four months have gone by since the conclusion of the armistice, but Lancashire traders still labor under the restrictions which were imposed during the war period. What they find particularly aggravating is that other countries, including those which trade in cotton goods, have been relieved of the war incubus and now have access to markets from which Lancashire is excluded.

Italy, France and America are now free to do business wherever they can get it. We have here in Lancashire great quantities of goods waiting shipment to Sweden; goods which were bought a great while back, and which are still held up by the government regulations. The same state of affairs holds good in regard to Holland. Under the regulations the exports of yarn to Holland must not exceed 7,000 tons per annum, which is quite a negligible amount in relation to Dutch requirements. Indeed, there are several mills in Holland which use upwards of half this total.

(*Continued on page* 435.)

COTTON MANUFACTURING.

The Separation or Cutting of Fabrics.

BY THOMAS WOODHOUSE.

The development of that branch of the textile industry which is concerned with the manufacture of comparatively heavy narrow fabrics has been extensive since the outbreak of the great war, and, although the greatest development may have been in connection with fabrics in which perfect selvages obtain, there has been a considerable increase in the amount of cloth which, after having been woven, is to be cut up into sections according to predetermined requirements. This severing of the pieces may be of a simple nature or it may be complex; some of it may be done by simple means and some by more complicated arrangements; part is done in the loom, and part after the cloth has left the loom.

In the first part of the article on "The Production of Narrow Fabrics" pp. 273 and 274 of the February 1918 issue of this journal there appears in Figs. 1 and 2, illustration of two samples of cloth provided with patent selvages, while at Fig. 3 there is a diagramatic view of a knife severing two cloths at that point where the shots of filling bridge the gap between two patent selvages. It is stated that it has been customary for many years to weave two narrow cloths side by side as a broad cloth, and then to sever the cloths up the middle with a hand knife as the wide fabric emerges from the cutting or cropping machine. This method of severing fabrics is practised in different branches of the textile industry, although the operation may be performed while the cloth is passing through a machine in a later stage than the cutting machine in the finishing process. Thus, it is a common practice when a wide cloth is woven in two or three sections for one or two attendants to hold knives firmly in contact with the divisions in the cloth while the latter is entering the calender. Protective measures are taken to prevent accidents to the operatives during the operation, and to make sure that the knife is not carried between the rollers of the calender.

The introduction of the patent selvage and the operation of severing fabrics were concerned first with those cloths which were intended to be cut up the middle, and in such cases the operation was comparatively simple. The first attempt at severing the cloth in the loom—so far as the writer's knowledge goes—was that by which a knife fixed on the breast beam cut the lengths of filling as the cloth was woven. Figs. 1 and 2 illustrate in elevation and plan one type of this arrangement. The breast beam of the loom is represented by A. A small base plate B, provided with

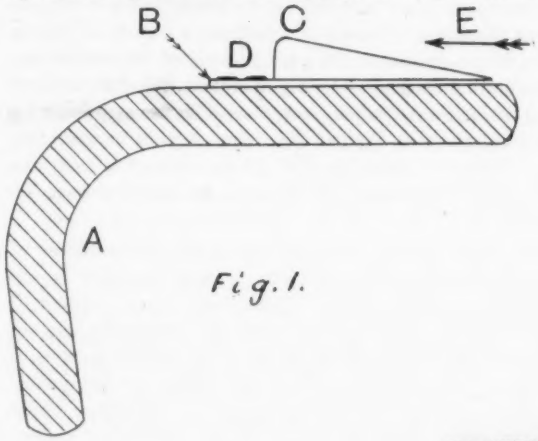


Fig. 1.

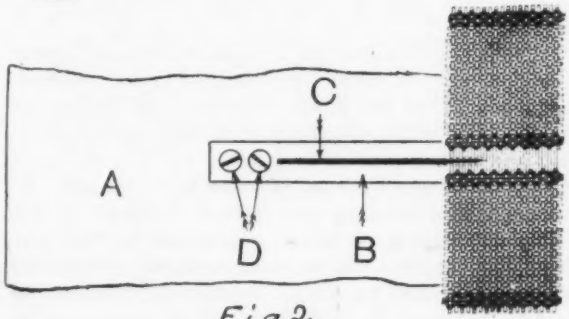


Fig. 2.

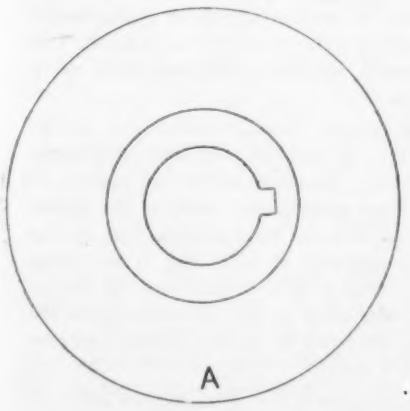


Fig. 4

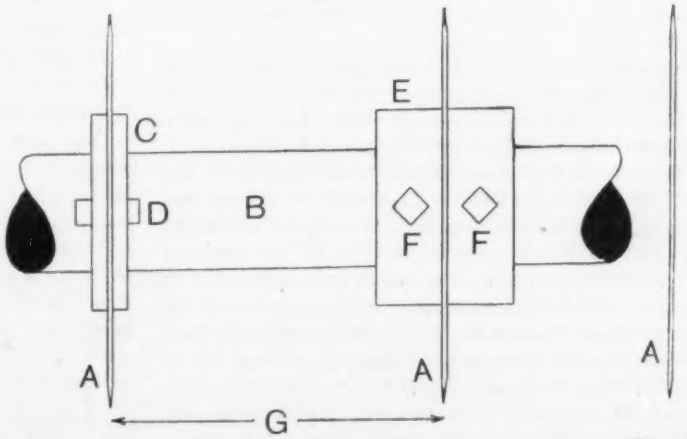


Fig. 5

Fig. 6.

an inclined knife C, is secured to the breast beam A by set screws D (other screws may be provided at the other end of the base plate if it is considered necessary). As the fabric moves to the left during the operation of weaving, and as indicated by the arrow E, the cloth is held tight and close to the upper surface of the breast beam, but those short sections of the filling which cross the gap in the central part of the cloth attempt to mount the incline of the knife, and in doing so the tension imparted to them causes the desired separation of the cloth as indicated in Fig. 2.

The problem of separating two such narrow fabrics in the loom is quite different from that of separating a much larger number such as sometimes obtains, where, for example, ten 2-inch fabrics are woven in one piece which, including the cutting sections, is 23 inches wide. But, although there is a difficulty in arranging a number of knives to cut in the centres of the gaps because of the contraction of the cloth during the weaving operation, the cloth is much better under control while being woven, so far as preserving a constant position, than at any other stage in its manufacture. Moreover, when the cloth is cut up in the loom, the operations of finishing—if any such are required—are increased.

The introduction of a number of stationary knives of the kind illustrated in Figs. 1 and 2 would probably be impracticable or unsatisfactory for cutting a large number of sections at one operation. If these were desired to be cut during the weaving process, it would be wise to arrange a number of rotating knives, first because they are more effective than stationary blades, and second, because they would be more easily adjusted to suit varying widths of narrow sections.

Illustrations of knives and methods of mounting appear in Figs. 4, 5 and 6. In all three cases the knife A is circular as indicated in Fig. 4, and arranged to be fitted to the shaft B which would extend across the loom and would be held in a suitable position by brackets bolted to the front of the side frames or else to the breast beam. It is an advantage to have the brackets adjustable for height so that as the diameter of the knives is decreased by wear and sharpening, the whole may be raised to the most satisfactory position for cutting the filling. A grooved pulley may be fixed to the end of the shaft B so that the pulley may be driven by means of a band belt or otherwise from a similar but larger pulley on the crank shaft or from wheel gearing from the shaft.

It will be understood that a guard must be provided to cover the upper projecting parts of the knives as a protection for the weaver and others. It is also desirable that a lower guard should be introduced to ensure safety to all

The knives in Figs. 4 and 6, and the left hand knife and collar C in Fig. 5, are fixed to the shaft B by keyseat and key D, while the right hand collar E is shown to be fixed by two set-screws F. The knives may be set any distance apart as indicated by G. The simple knife illustrated in Fig. 6 is quite satisfactory and would probably be the most convenient where a number of knives had to be fixed.

One of the objections to a circular knife such as any of those illustrated in Figs. 4, 5 and 6 is that, since the edge of the knife is always in contact with the cloth, the cutting is not as efficient as one would desire. Intermittent frequent contact is considered to be the best method for satisfactory and clean cutting. Consider, for example, the fabric illustrated in Fig. 7. This is a representation of the work produced in chenille weft weaving; after this cloth leaves the loom, it is cut up between the various groups of warp threads, as indicated by the arrows, to form ultimately the figuring weft for the well-known patent Axminster carpets and similar fabrics.

One method of cutting these sections is to arrange a number of knives, each similar to that illustrated in front and end elevation in Fig. 8, so that if there were 12 knives in the round of the cylinder, one-twelfth of the sections would be cut at a time; but the groups of knives in the horizontal direction of the cylinder would follow each other in such rapid succession in virtue of the speed of the cylinder that there would be only an infinitesimal of time between successive contacts at any and all points of the cutting. The cloth should pass between guides so that it will be held firmly while the knives are acting, and the knives themselves rotate in guides for accuracy. Similar guides would be of great advantage in connection with the knives illustrated in Fig. 4, 5 and 6, and the vertical ones might serve to sharpen the knives.

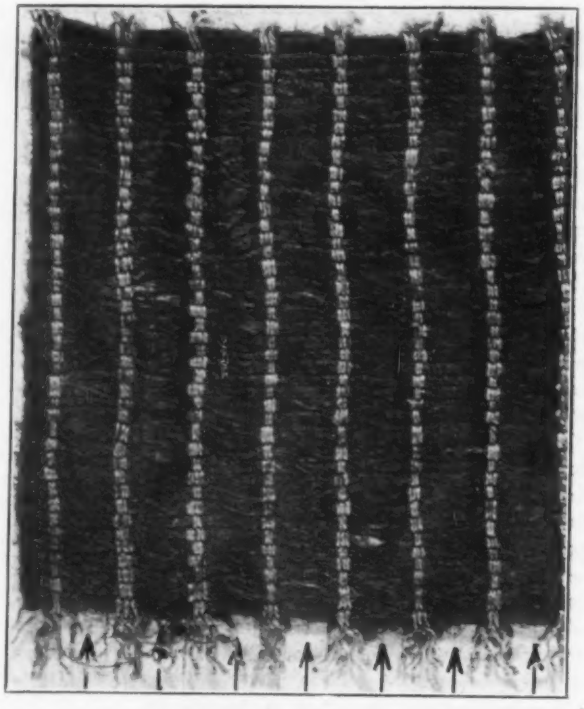


FIG. 7.

Now such a large circle as would be required to accommodate 12 knives in a round could not very well be arranged on the loom for cutting the cloth during the process of weaving, but the intermittent action between the knives and the cloth could be obtained by arranging four similar blades in a circle as indicated at A in Fig. 9, and fixing these blades by set-screws B to a suitably shaped disc or boss, keyed or otherwise fixed at the desired place on the shaft C, and driving the latter as already indicated in connection with Figs. 4, 5 and 6.

A recently-patented process for trimming the edges of felt, carpet and the like is also intended for the foregoing type of separation, and consists of one or more rotating disc cutters which act in conjunction with a similar num-

ber of fixed cutters; the cutters are hollow ground and mounted to give a shearing cut and to be self sharpening; the latter function is obtained by providing the fixed cutter with an insertion of hardened tool steel for preserving the cutting edge and for the better sharpening of the rotary cutter.

There is also a method of cutting or slitting by means of pressure between a number of steel discs and a glass hard steel roll. The cloth passes between the discs and the roll, and after the several narrow widths have been separated, they are wound into separate coils of cloth.

Notwithstanding the different appliances which have been utilized for separating fabrics into strips in and out

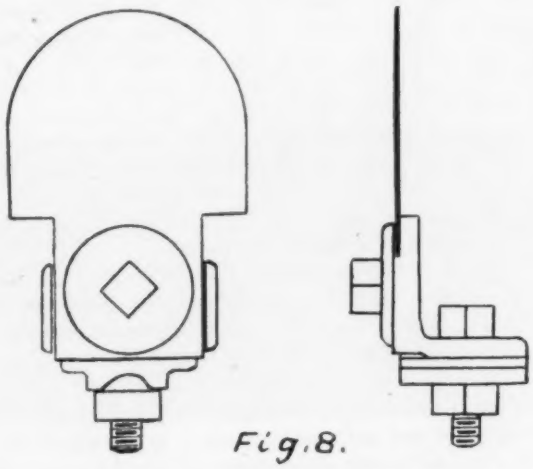


Fig. 8.

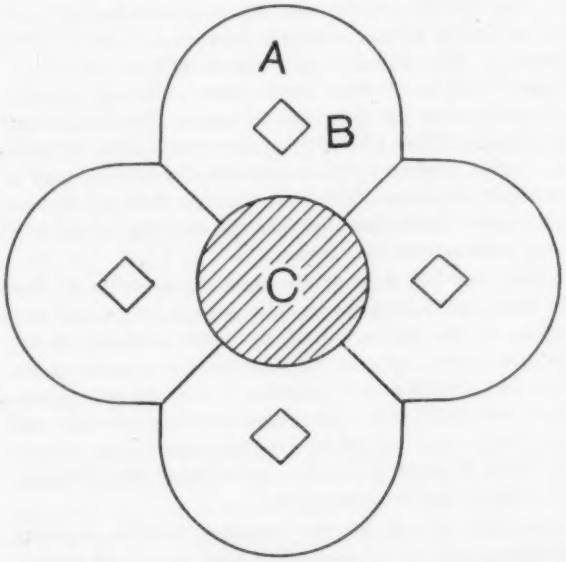


Fig. 9.

of the loom, many simple methods are still practised to achieve the same end. Thus, in the case of the separation of very narrow 2-inch fabrics such as those mentioned, one end of the complete woven fabric is sometimes thrown over an iron rod or pipe situated a few feet from the floor, and the fabric pulled over and simultaneously cut up one of the gaps by a hand knife near or at the middle depending upon the number of sections. After this separation has been effected, the process is repeated in the other gaps until all the narrow strips are detached.

It will be understood that this description of cutting does not include those types which are practised for the separation of full width fabrics of the double plush order.

Re-Working Old Belting.

The Greenville Belting Company, of Greenville, S. C., has a plant equipped with the latest and most up-to-date machinery for manufacturing leather belting. This plant is in charge of thoroughly trained expert workmen, all of whom have had a long experience in the manufacture of belting with some of the larger belting factories.

The average belt discarded by the cotton mills has only spent 50 to 60 per cent of its life functions due to the fact that owing to the unavoidable mechanical conditions, it becomes saturated with oils, greases and other foreign matter, rendering it inadequate for producing results. Also, many belts meet with accidents, tearing them apart when they have only been in use a comparatively short while. In each of these cases the stock is perfectly good and all it needs is to have it rebuilt, when it is again capable of performing the same duties as when it was brand-new.

This company takes a belt in its seemingly worthless condition, thoroughly renovating it by extracting all oils, greases and other matter which has caused it to become useless as belting, make new laps and rebuild it in identically the same manner in which they would make belting from new leather, then they give the finished belt a special treatment in order to liven up all the fibers which have become harsh and dry from usage and exposure; thus returning to the mills a practical and serviceable belt which they have been throwing in the waste pile in the past.

This Greenville concern claims that if the mill management would stop and consider the amount of real money they are throwing into the waste pile in perfectly good belting, they would become interested in this proposition. They further state they are now doing this work for mills all over the South, resulting in materially decreasing their belting bills, and cite, for example, some recently compiled figures showing that they have re-worked and saved for one mill in South Carolina in twelve months, old belting which would have amounted in new belting to $5,250.00. This re-working cost them a mere trifle compared with what new belting would have cost.

After about six months of careful work by artists and printers the Puro Sanitary Drinking Fountain Company, of Haydenville, Mass., is mailing customers and friends a new catalog which is known as "Catalog D" and which covers all the various styles manufactured by the Puro Company, such as fountains, coolers, etc. The Puro fountain is an up-to-the-minute sanitary replica of the old familiar bubbling spring to which every person at some time of his life has gone to quench his thirst. A copy of this catalog may be secured upon application to the home office of the company.

The man with a good memory knows when to forget.

Dyeing, Bleaching and Finishing.

Waterproofing Cotton Goods.

BY WILLIAM B. NANSON.

WATERPROOF AND WATER REPELLANT.

It is customary to include under the term "waterproofing" such processes as the impregnation of textiles with india rubber, gutta-percha and by other mechanical means. We shall, however, in the present article, restrict ourselves to the treatment of cotton fabrics by chemical means, so as to precipitate insoluble oxide in the fibre, or else to impregnate the fibre with organic bodies, such as paraffin wax, etc., so as to make it comparatively impervious to water.

India rubber, gutta-percha, succatose oils, tar, paint or other mechanical media, which simply act as waterproofers by covering up and filling in the spaces between the threads with an air-tight, as well as a water-tight substance have have been recognized as unhygienic, because, when used for clothing they prevented the evaporation of the secretions of the body. Moreover they were unsatisfactory in that when exposed to the action of the sun and the air they acted as dialyzers and retained a portion of the atmospheric nitrogen which in time reduced them to a friable, inelastic condition, causing the waterproofing material to burst open in the folds and become leaky and useless.

Those processes which are usually called chemical, and also those which act by stopping up the cells and pores of the fabric with an easily deposited substance are quite pervious to air. In the former case, precipitates of insoluble metallic compounds or of insoluble metallic soaps are produced in and upon the fabric by chemical reactions. In the latter the fibres are soaked with paraffin wax, etc., in solution. The solvent quickly evaporates and leaves the paraffin behind in a very fine state of division. In both of these cases the fabric itself has suffered no visible change, but the paraffin coat is air tight for a time until the folding up of the fabric when cold breaks up the brittle layers of the paraffin, and they become neither water nor air tight.

In most of these chemical processes the goods retain their original color, softness and suppleness, except in a few cases; if tannin, for instance, is used, the color of the fabric becomes somewhat darker but the difference is hardly noticeable in most cases. If either a bleached or unbleached fabric is waterproofed with acetate of alumina, its appearance and feel remain the same. The following substances are used more particularly for waterproofing cotton goods: Sulphate and acetate of alumina, acetate of lead, the sulphates of copper, zinc and iron, ammonium cuprate, paraffine, ceresine, wax, soap, casein, etc.

Most of the processes used for waterproofing cotton fabrics involve, to a greater or less degree, the application of the colloid theory, by the precipitation upon and in the fibres as a hydrated metallic peroxide, or a tannin, in combination with some other colloid substance, as albumin, glue, casein, the fatty acids (soaps), etc.

Now a colloid, as distinguished from a crystalloid, is recognized as more usually showing a rounded outline, a homogeneous mass, with more or less toughness of texture. Crystalloid bodies, on the other hand, tend to aggregate in plane films, with sharp angular outline, and are hard and solid, their waters of crystallization being represented in the colloid by its water of gelatination. Now assuming the generally accepted theory of the spheroid character of water as being correct, and the rounded outline and smooth homogeneity of the colloid used as a waterproofer on the fabric, it will be seen that so long as the fabric is dry any descending water or rain—being itself (physically at least) in a colloid condition—will roll over the rounded outlines of the colloid in the fabric and run off without wetting it. This condition is the one known to the trade as repellent, and renders the fabric in no sense waterproof, as the water can easily be beaten through or drawn through by capillary attraction from the other side.

Khaki dyed cottons are among this class; they are not waterproof but repellent; their repellency being due to the colloid peroxides of iron and chrome precipitated on the fibre in conjunction with some fatty acids.

Lowry's process of waterproofing is one of the best, he steeps the fabrics for some hours in a boiling mixture of soap, glue and water and exposes it to the air to partially dry. It is then digested for 10 hours in a strong solution of alum and common salt, it is then washed well and dried at a low temperature, about 80 degrees F. The efficacy of this process is governed largely by the length of time used, and the low temperature of the drying processes and is not very practical. It may be further said that more repellency as produced by the precipitation of fatty or resinous soaps of the various metallic oxides is of a temporary character only and will not long remain repellent after much wear and tear and exposure to the oxidizing influence of the weather.

The very best kind of waterproofing agent is one that will allow the comparatively free passage of the air and permit of the moistening of the outer surfaces of the cloth, but which opposes the passage of the water to the other side, and there are a number of colloidal precipitates which will fulfill this requirement—colloidal alumina and tin, gellatin, glue and casein, rendered insoluble by chromic acid, alum or paraffin. Cellulose precipitated from Schweitzer's reagent (cupric ammonium).

Colloidal alumina may be prepared from the diacetate of alumina; this in the presence of much water, and treated, furnishes a hydrosal of alumina which is precipitated in a gelatinous form by the addition of a solution of sulphuric acid. The salt thus obtained has no effect on coloring matters and is insoluble in water. An analagous salt to this can also be produced from alum as explained in an article on Fireproofing in COTTON for January, 1919, where I speak of Alumin. Gelatin, glue and casein may be applied to the cloth and then rendered insoluble, and consequently waterproof, by chromic acid or formalin. In studying the behavior of gelatin or casein in this respect Lamiere and

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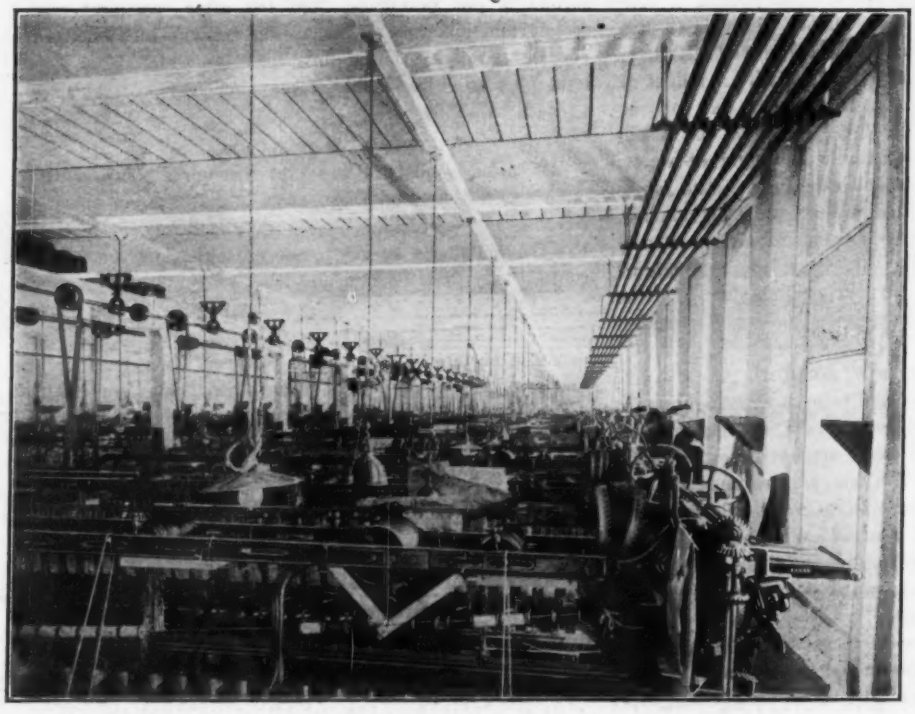

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Seycroitz conclude that compounds of the various oxides form insoluble compounds with gelatin; in the case of chromic oxide three and one.half parts of chromic oxide render 100 parts of gelatin insoluble, which is the more stable the less it contains of free acid. Also that chromic acid and its salts render gelatin insoluble in the presence of light. Also that chromic aldehyde acts upon gelatin (or casein) either in the gaseous state or in solution. It must be remembered, however, that all waterproofing processes involving glue, gelatin, or casein will render the goods stiff—to avoid this castor oil or some neutral soap must be added to the mixture to keep it soft and pliable.

A process based upon this idea has been invented by the writer and found to be a good one, it renders goods, if fairly closely woven, absolutely waterproof but not repellent. The goods will wet readily enough on the surface but the water will not penetrate to the opposite side.

The process is as follows: Thoroughly soak 30 pounds (or any multiple of it) of casein in water overnight; the next morning add sufficient ammonia to the mixture to make it soluble; then add 15 pounds of pure tallow soap in solution bringing the whole quantity of the mixture up to 50 gallons; heat this up but do not boil it. Pad the goods with this mixture on a back filling machine, spreading the casein solution on one side only and from this run the goods directly and continuously through an ageing machine charged with formalin in vapor, regulating the speed so that it will take about 10 minutes to run a given point through the machine. Return the goods and repeat the process, spreading the casein this time, however, on the reverse side. After this second padding and ageing take the goods and run them through a cold solution of acetate of alumina at 7 degrees Tw. and wash and dry at a cool temperature preferably in the open, or drying room.

Waterproofing goods with glue and tannin, gelatin, casinate of lime, etc., depends upon the formation in and upon the fibre of substances which repel water mechanically, or are simply substances which fill up the interstices.

Waterproofing goods with glue and tannin is based upon the fact that by the action of tannin or bichromate, compounds insoluble in water, are formed. In this sort of waterproofing a proper selection of the goods forms an important part and it should only be applied to fine and closely woven cloth, in which the threads are not twisted together. Each thread must be fairly free or the solutions cannot penetrate it properly. Good penetration is essential to permanent waterproofing. The process consists of running the goods through the glue and squeezing and drying nearly dry, then through the tannin solution, wash and dry up. The color acquired by goods waterproofed by this process is a more or less dark brown.

There are various processes by which the goods are run through mixtures of gelatin, glue, or casein and tallow soap or castor oil and alum boiled together and then heavily squeezed and dried to about 40 degrees C. One of the simplest of these is as follows: 36 pounds of sulphate of alumina are dissolved in 25 gallons of water. To this solution is added 61½ pounds of acetate of lime dissolved in 25 gallons of water, allow this to settle and decant the clear liquor; to this clear liquor add 1½ pounds of tannic acid. Pad the goods in this and dry up, then soap in tallow soap and dry up.

The caseinate of lime method is said to insure the fabric retaining its softness and perviousness to the air and to enable it to be washed with soap, benzine, etc., without its losing its waterproofing qualities. The process is conducted as follows: Casein is mixed with about five times its weight of water, and the whole is well stirred to a creamy liquid. This is gradually mixed with a weight of slaked lime equal to about one-fortieth of that of the casein. At the same time half the weight of the casein in soap is dissolved in twelve times its weight of water, and the soap solution is mixed with the other. The fabric is impregnated with the mixture until its weight is doubled. The fabric is next dipped in a solution of aluminum acetate at 7 degrees Tw. (cold); this makes the caseinate of lime insoluble and forms a margarate of alumina with the alkaline soap. The fabric should then be soaped, washed and dried.

THE "WILLESDEN" FINISH.

This is the ammonium cuprate process and the liquor is prepared as follows: A cold solution of sulphate of copper is precipitated with the exact amount of caustic soda necessary or slightly less. The temperature must be kept below 20 degrees C. or the precipitate will be black instead of blue, and the leaving of a small excess of copper sulphate is an additional precaution against this. The precipitate is washed with condensed water till the washings give no precipitate or next to none, with chloride of barium. This precipitate is then pressed to get rid of most of the water, and dissolved in just enough ammonia of sp. gr. 0.93. The strength of the solution in copper is then determined, and enough additional ammonia is added to make the solution contain 18 to 20 grammes of copper to the litre.

Cuprate of ammonia dissolves great quantities of cottons and holds them in solution, and cotton wastes and linters are dissolved in it and the fabric to be waterproofed is run through the copper solution at a carefully regulated speed, so that the fibre is partially parchmentized, and so that the cellulose in solution has time to deposit in and between the threads. When cotton is treated with an ammoniacal solution of copper hydrate the fibre swells up considerably and slowly dissolves forming a thick slimy solution, from which acids throw down a gelatinous precipitate and the "Willesden" process really consists of partially dissolving the cellulose of the cotton fibre by an ammoniacal copper solution and then precipitating it into and upon the remaining fabric and driving it into the interstices with pressure where it forms an impervious mass both water and mildew proof.

The goods to be treated are first boiled in a solution of caustic soda to remove the cutin, etc., forming the outer resemblance of the cotton fibre. This is important as these substances are insoluble in the cupra ammonium solution, and unless removed acts as a bar to its action.

The goods are then subjected, at a low temperature, to an immersion in a bath of cupric ammonium, its effect is to dissolve a portion of the cellulose and precipitate it on the goods which are then passed while wet through a heavy pressure mangle which consolidates the partially dissolved fabric and closes up the interstices. Sometimes cotton and silk waste is dissolved in the ammonia liquor before its application to the goods which materially assists to fill up the holes and increase the impermeability.

The goods are run finally through a bath of acetate of alumina with a trace of bichromate of potash to fix the cellulose, and dried at a temperature of 80 degrees F.

This "Willesden" finish though having a great name abroad is not permanent, but the after treatment with acetate and bichrome (which is the writer's idea) helps it very materially. If the finished color which is a dirty light blue is objectionable it may be cleared or bleached off with sulphurus acid.

STEARATE OF ALUMINA.

If cotton goods are run first through a solution of a pure tallow soap and then through one of alum or other suitable salt a certain degree of repellency is realized, but the aluminate or other salt or soap thus formed becomes easily disassociated and loses its repellency in time; but if we reverse this manipulation we get a far better result. The best results may be obtained by padding the goods in acetate of alumina at 7 degrees Tw., then dry up and age, then work in a solution of soap and glue with a little chrome added or dry up in an atmosphere of formalin.

A simple process that has given good results is to immerse the goods in a solution of acetate of alumina at 7 degrees Tw. and dry them as cool as possible, then work them in a hot solution of soap, or soap and glue, or casein, using about one-half a pound of soap, etc., to the gallon of water; then rinse off in cold water if soap only is used but if glue or casein is used the rinsing water should contain a little formalin, or chrome salt—preferably the acetate.

As the goods in this case have to be run through a boiling acetate of alumina to wet them out it will be necessary to make a special acetate, as the ordinary neutral acetate of alumina will not stand heating above 38 degrees C. without dissociation, therefore it is best to make a mixture as follows in which the sulphate of alumina is largely in excess: Sulphate of alumina (or alum) 10 parts, carbonate of soda 9 parts, acetic acid 3½ parts. Long steeping in the alumina and cool drying of it are great elements of success in all cases where an aluminum salt is used.

Another method of depositing the stearates of the metallic oxides in the goods is to precipitate a solution of soap with a metallic salt such as sulphate of alumina, iron or copper. The resulting precipitate is then washed and dried and then redissolved in some hydro carbon solvent and applied to the goods in this condition. If bisulphide or tetrachloride of carbon be used as a solvent, it may be recovered and used again while the stearate is deposited on the fabric. If alumina is used as a base, stearate of alumina will be deposited upon the fabric and the waterproofing will be quite effective.

ALKALI CELLULOSE XANTHRATE.

The following process is good for waterproofing cotton goods. When a piece of cotton, which is pure cellulose, be placed in a strong solution of caustic soda, the caustic causes the cellulose to unite with a molecule of water and the cotton shrinks in length twenty per cent, it gains in weight and becomes stronger. If cotton thus treated with caustic soda is now exposed to the action of carbon bisulphide the substances unite together with the formation of a substance which is called chemically alkali-cellulose-xanthrate, which, when thoroughly dried at a temperature of not less than 70 degrees F., is impermeable to water. Ad-

Barrett Specification Roof on Round House of Southern Railway System at Finley Yard, Birmingham, Ala.

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We offer this bond on all Barrett Specification Roofs of 50 squares and over in all towns of 25,000 population and more *and in smaller places where our Inspection Service is available.* Our only requirements are that the roofing contractor shall be approved by us and that The Barrett Specification dated May 1, 1916, shall be strictly followed..

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Barrett Specification Roof on Freight Depot and Office Building of the Southern Railway System at Atlanta, Ga.

20-year Barrett Specification Roof on Shed for Repair of Steel Cars of the Southern Railway System at Coster, Tenn.

vantage is taken of these phenomena to render goods so treated both mildew and waterproof by the following process:

The goods, after being thoroughly scoured, are immersed in a caustic soda solution of about 60 degrees Tw. through a padding machine delivering about 30 to 50 yards per minute, from this they are squeezed nearly dry through heavy squeeze rolls. They are now exposed to the vapors of boiling bisulphide of carbon in an ageing machine or continuous steamer for ten minutes. The material can be exposed to an atmosphere charged with carbon bisulphide by passing a jet of steam into a little of the latter placed below the fabric in a vessel in the steamer or ageing machine. The thiocarbonate of cellulose thus formed is then pressed into the goods by heavy squeeze rollers and then soured, washed and dried.

Alkali-cellulose-xanthrate may be also applied in another way by means of wood pulp. The pulp—matte paper—is treated with caustic soda at 40 to 60 degrees Tw. and fully mercerized; the caustic having been thoroughly squeezed out of the pulp, twenty-five pounds of bisulphide of carbon (or the tetrachloride will answer) is added to every one hundred pounds of the pulp. This brings the whole mass to a gelatinous form of a bright orange color when it is ready for use. It is well to mix it in a barrel and roll the barrel about. It must of course have an air-tight cover on it as the bisulphide is very volatile.

After the solution has developed to the right point it may be taken out and mixed with water to the required consistency and the goods padded with it. This process practically mercerizes the goods as well as fills and waterproofs them. They shrink from four to six inches per yard in both width and length and after waterproofing they will of course require souring and washing to get the soda out of them.

Another process, something on the order of the "Willesden" process, is to fill the goods with a cupra ammonium solution of cellulose in which cotton only can be used, wood pulp or other forms of cellulose having been found unsuitable. This cotton, generally in the form of linters or low grades of cotton waste, is first thoroughly bleached. It must be boiled in caustic soda and soda ash twice and well washed, chemicked in hypochlorite of soda (not lime), washed until all traces of chlorine are eliminated, then hydroextracted until the bleached stock contains less than 50 per cent of water and it is then ready for solution.

The cupra ammonium solution is prepared by filling a large iron vessel with copper turnings and covering them with ammonium hydrate solution containing 14 per cent of ammonia; air is blown through the solution which must be kept at a temperature below 4 degrees C., and in about 24 hours the copper is dissolved. To this solution is added a small quantity of caustic soda and, if necessary, copper sulphate to raise the copper oxide content 18 to 20 grammes to the litre and 2,500 pounds of it is then run into the mixer, into which has been put 500 pounds of the wet purified cotton, solution takes about six hours, and during the whole of the operations, and the subsequent filtering, a temperature of less than 5 degrees C. must be maintained, otherwise the copper is thrown out of solution.

The goods are padded in this and heavily mangled, then treated with acetate of alumina and a trace of chrome, dried, soaped, washed, dried and finished.

In some receipes for waterproofing gum tragacanth is used in place of glue as previously described, for instance, for each gallon of mixture is used two ounces of gum tragacanth, two ounces of soap, one pound of alum and one pound of lead acetate. The tragacanth and soap are dissolved in sufficient wood alcohol to cover them and the lead acetate and alum previously dissolved and settled (using only the clear) are added to the spirit mixture.

There is of course the waterproofing of fabrics with cellulose or pyroxylin, gun cotton, etc., dissolved in acetate such as is practiced on the wings of airplanes and which has no place in this article though very interesting.

TESTING FOR WATER REPELLENCY.

The present methods of testing are all wrong. I know a firm who tests waterproof rubberized fabrics for rain coats by subjecting them to an enormous hydraulic pressure which they would never experience in actual wear. Another firm tests water-resistant coatings by leaving two or three inches depth of water overnight in a pocket of the fabric, with the supposition that if none leaks through the coating is rain proof. The fact is that a falling rain drop has much more force of penetration than the pressure exerted by a couple of inches of water. A manufacturer of cotton duck clothing has been known to kick like a steer on making the following test: He took a piece each of untreated and water repellent fabric, consisting of thirty or forty folds. Then he poured a little water carefully on the top fold of each piece and gave it a heavy blow with a mallet. To his surprise the water penetrated the water-resisting folds much more than the untreated, the latter, by absorption, causing the water to spread out laterally instead of penetrating the layers.

I should advise that waterproof fabrics that are coated or filled be tested by placing water on the surface and trying to force it through by a pressure not greater than that which would be exerted by a wind traveling at the rate of 50 miles an hour. Water-resisting fabrics to be used in garments to keep out rain should be tested by squirting water on them from an ordinary ear syringe while holding the cloth in a position it would assume in a rain storm. Where the object of a water-resistant finish on a fabric is to prevent damage by water, a wet cloth should be dabbed on the surface until the water is absorbed and the fabric allowed to dry. If no mark is left by the water, the water-resistant finish may be said to be effective.

It must be borne in mind that in waterproofing there is no such thing as "absolute impermeability," even if the fabric has shown itself watertight for weeks. If a pocket is made of a waterproof fabric and kept full of water, we will notice at last that the color of the outside has changed up to the level of the water inside without the water itself showing. This appearance indicates that the water has to some extent penetrated the fabric.

They occur sooner if the waterproofing has been done with aluminum acetate alone as the basic alumina salts in the fibre gradually dissolve. If, however, a stearate of alumina is used the waterproofing is more permanent.

As in fireproofing, all goods for waterproofing should be thoroughly scoured before being processed, this being an aid to penetration which is essential.

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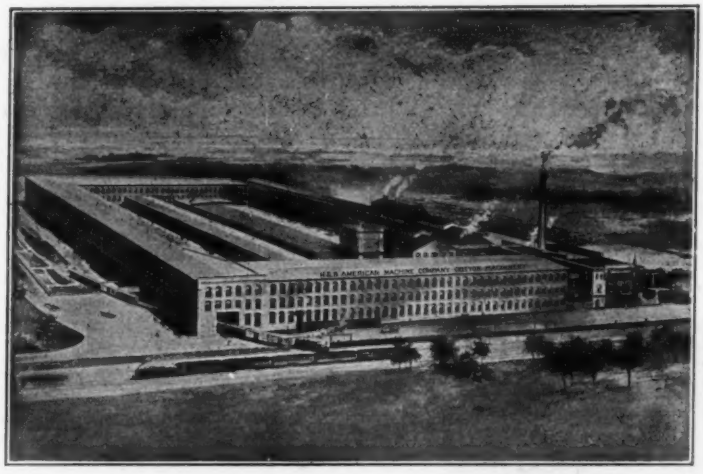
COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY
PAWTUCKET, R. I.

Notes About Men You Know.

S. P. BLAND has resigned as overseer of weaving at the Roanoke Mills Company, Roanoke Rapids, N. C., and accepted a similar position with the Holt, Grant and Holt Cotton Manufacturing Company, Elon College, N. C.

J. S. WALKER, former overseer of spinning at the Glencoe Mills, Columbia, S. C., is now night superintendent of the General Asbestos and Rubber Company, Charleston, S. C.

J. W. ROBERTS has resigned as overseer of weaving at the Dacotah Mills, Lexington, N. C., and returned to his former position as overseer of weaving at the Gibson Mills, Concord, N. C.

B. L. MCDONALD has resigned his position at the Imperial Mills, Eatonton, Ga., and accepted the position of overseer of spinning at the Mary-Lelia Mills, Greensboro, Ga.

J. L. BOBO has resigned his position at Toccoa, Ga., and accepted the position of overseer of weaving at the Mills Mill, Greenville, S. C.

G. F. FLEMMING from Enoree, S. C., has accepted the position as overseer of spinning at Piedmont Manufacturing Company, Piedmont, S. C.

W. H. BROOKS, from Osage Mill, Bessemer City, N. C., has accepted position as overseer of weaving at Rhodhiss Manufacturing Company, Rhodhiss, N. C.

J. P. ELLER, of Charlotte, has accepted the position of overseer of weaving at the Altavista (Va.) Cotton Mills.

J. L. WHITEHEAD has been promoted from second hand to overseer of spinning at J. P. King Manufacturing Company, Augusta, Ga.

R. B. HUNT has become overseer of spinning and assistant superintendent of the Adams Cotton Mill, Macon, Ga.

A. A. SHORT has resigned as overseer of spinning and twisting at the Parkdale Mills, of Gastonia, N. C., to become overseer of spinning at the Marlboro Mill No. 4, McColl, S. C.

R. H. COOK has resigned as carder at Mooresville (N. C.) Cotton Mill to accept a similar position at Salisbury Cotton Mill.

G. D. NASH, of Abbeville, S. C., has accepted the position of cloth room overseer at Hermitage Mills, Camden, S. C.

J. F. BLANTON has accepted a position as overseer of spinning at Enoree Mills, Enoree, S. C.

J. A. STEWART has resigned as second hand in carding at the Indian Head Mill, Cordova, Ala., and accepted a similar position at the International Cotton Mills, LaGrange, Ga.

A. P. RICHIE has resigned as overseer of spinning at the Jewell Mill, Thomasville, N. C., to become overseer of carding at the Pomona Mill, Greensboro, N. C.

R. H. DALLAS has resigned as overseer of spinning at the Belton (Tex.) Yarn Mill and accepted a position with the Swift Mfg. Co., Columbus, Ga.

R. W. ARRINGTON, secretary of the Union Bleaching & Finishing Company, of Greenville, S. C., will, upon his return from France, represent this company in their New York office.

Notes About Men You Know.

W. T. CLAYTOR has resigned his position as superintendent of the Rabell Manufacturing Co., at Selma, Ala.

C. E. HAGUE, formerly production engineer of the Mid-West Engine Company, Indianapolis, Indiana, has been appointed sales manager of the American Steam Conveyor Corporation, Chicago, manufacturers of the American Steam Ash Conveyor and other ash handling equipment. Mr. Hague assumed his duties March 17th.

HENRY D. GAGNER, superintendent of the weaving, silk and cotton winding departments of the Aberfoyle Manufacturing Co., Chester, Pa., has resigned his position and has accepted the superintendency of Mill No. 5 of the Renfrew Manufacturing Co., Adams, Mass.

C. K. DAVIS.

C. K. DAVIS, of Newberry, S. C., recently released from government service, has accepted a position with the firm of Stein, Hall & Company, Inc., with offices in New York, Philadelphia, Boston, Providence, Troy, San Francisco, Chicago, Cleveland, Cincinnati and St. Louis, as well as abroad. Mr. Davis has had several years' practical experience in cotton mill work, having been connected with the Newberry Cotton Mills, of Newberry, S. C. The practical knowledge which he has acquired in the textile industry, coupled with the high grade starch products of all kinds, which he has to offer, should make this young man from the cotton mill, a valuable asset not only to Stein, Hall & Company, Inc., but to the textile industry. We bespeak for Mr. Davis a hearty welcome in his new capacity among his southern friends.

W. H. LYNCH has accepted a position as superintendent of the Globe Mills, Augusta, Ga.

W. D. MCCOMBS has resigned as superintendent of the Georgia Manufacturing Company at Whitehall, Ga., to become superintendent of the mill recently purchased by the Union Thread Company in Athens, Ga.

C. H. GOODROE has resigned as superintendent of the John E. Smith Mfg. Co., Thomson, Ga.

B. W. KOONTZ has been promoted from assistant superintendent to superintendent of the Bedspread Mills, Leaksville, N. C. He is also superintendent of Athena Spinning Mills, at Leaksville.

H. K. ROBERTS, formerly overseer of carding at Salisbury Cotton Mill, has accepted position as superintendent of Long Shoals Cotton Mills, Lincolnton, N. C.

J. W. JAY has been transferred from overseer of weaving at the Aragon (Ga.) Mills to superintendent of the Brookford Mill at Brookford, N. C.

J. R. KILLIAN, formerly superintendent of the Cannon Mills, Concord, N. C., but more lately in government service, will be manager of the Beaver Mills, which takes over the John E. Smith Cotton Manufacturing Company, Thomson, Ga.

J. L. BEALE has been appointed superintendent of the Georgia Manufacturing Company, Whitehall, Ga.

P. M. SINCLAIR has been promoted from overseer of spinning to superintendent at the Aragon (Ga.) Mills.

C. L. FAULKNER has been appointed superintendent of the Liberty Mills at Dallas, Ga.

J. W. MOOTY has resigned as superintendent of the Hogansville (Ga.) plant of the International Duck Company, and accepted a similar position at the Beaver Duck Mills in Greenville.

E. C. TURNER, formerly overseer of weaving at the Fulton Bag and Cotton Mills, is now superintendent of the London (Ohio) Fabric Mills.

D. A. READ has been promoted from overseer of spinning and twisting to superintendent of the Hogansville (Ga.) plant of the International Duck Company.

J. H. CAMPBELL, formerly overseer of weaving at the Banna Manufacturing Company, Goldville, S. C., but more lately with the Hopedale Manufacturing Company, Burlington, N. C., has accepted the position of overseer of weaving at the Cherokee Manufacturing Company, Cherokee Falls, S. C.

C. R. EVANS has resigned as overseer of cloth room at the Republic Mills, Great Falls, S. C., and returned to Paw Creek, N. C., where he has been overseer of cloth room at the Thrift Manufacturing Company, for over six years.

W. A. SMITH has been promoted from loom fixer to overseer of weaving at the Hamilton Carrhart Mill No. 2, Rock Hill, S. C.

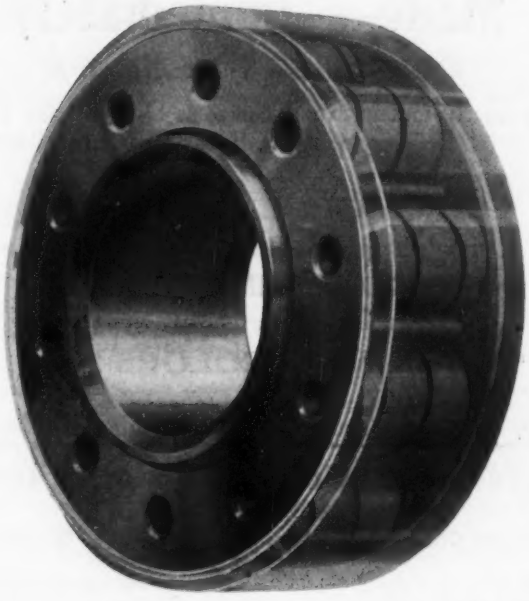
J. L. LEDWELL, of Bessemer City, N. C., has accepted the position of overseer of spinning at the Capitola Mill, Marshall, N. C.

LEE LOCKLAR has been promoted to overseer of cloth room at the Republic Mills, Great Falls, S. C.

JAMES L. GREESON has been appointed overseer of spinning at Augusta, Ga., factory.

J. L. WARD has been appointed overseer of spinning at Enterprise Mills, Augusta, Ga.

You Should Know This Type of Hyatt Roller Bearing



The Hyatt High Duty Roller Bearing

This type of Hyatt Roller Bearing is composed of the following parts:
THE INNER RACE: Formed from a length of seamless steel tubing, carefully heat treated and ground. It is used wherever the shaft cannot be hardened and is pressed directly upon the shaft.

THE OUTER RACE: Made from the same material as the inner race, carefully heat treated and ground. It is pressed into the housing of the bearing.

THE ROLLER ASSEMBLY: A series of rollers wound cold from a flat strip of chrome-vandium steel, heat treated and ground to close limits and mounted in a sturdy cage. These rollers provide a true rolling motion between the inside of the outer race and the outside of the inner race.
The Hyatt High Duty Roller Bearing Is Of Advantage:

1. **Where concentrated loads must be carried on a limited bearing length.**
2. **Where high speeds, high loads or a combination of these two conditions exist.**
3. **Where precision operation is imperative.**
4. **Where maintenance of gear centers is important.**
5. **Where a bearing easy to assemble is needed.**
6. **For any moving part of a textile machine where a high grade, durable, dependable bearing, capable of giving years of service is required.**

Send for further information on the use of Hyatt High Duty and Hyatt Split Race Bearings for your textile machinery.

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DETROIT, MICHIGAN

HYATT ROLLER BEARING COMPANY
INDUSTRIAL BEARINGS DIVISION
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Manufacturers of Bearings for Mine Cars, Ore Cars, Steel Mill Cars, Roller Tables, Trolleys, Cranes, Hoists, Machine Tools, Line Shafts, Countershafts, Concrete Machinery, Textile Machinery, Conveyors, Lift Trucks, Industrial Tracks, Railway Service Cars, Storage Battery Locomotives, etc.

1916

HYATT BEARINGS FOR TEXTILE MACHINERY

American Made—Immediately Available

DIRECT SKY BLUE F F

The product known formerly under several names as Diamine Sky Blue FF, Chicago Blue 6 B, Benzo Blue 6 B, etc., Bright greenish shade of Sky Blue which can be aftertreated with Bluestone.

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Highest quality—Increased production.

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Newest addition to our line of Direct Blues.

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Our white is fast (yours may yellow up);
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New York, N. Y.

How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

What Makes the Card Flats Fill In.

EDITOR COTTON:

I would very much like to have the readers and contributors to your practical discussion department write some articles on card flats filling-in and the cause therefor.

I know of an up-to-date mill, equipped with all the latest machinery and supplied with a compressed air system of atomizing humidifiers that is troubled in the manner indicated. The humidity maintained in the room is from 65 to 70 while the dry bulb varies from 70 to 80 degrees F. The peculiarities of this proposition is that there are three different card rooms at the same plant operating under similar conditions, the flats in two of the rooms fill in badly, while in the third room no trouble is experienced.

I am a regular subscriber to COTTON and have been for several years, during which time I have read some very interesting and instructive articles. I shall watch the forthcoming issues with great interest and trust that some of my brother readers will be able to explain the difficulty described. Ben (N. H.)

EDITOR COTTON:

The filling in of card flats is a very common occurrence and there are numerous causes for this unsightly condition. Some of them are:

Rusty flat clothing, generally caused by dampness from leaking sprinklers, dripping humidifiers, or by water actually thrown onto cards during a fire. Leaks from poor roof or bad floor above frequently rust the flat wire.

Oil dripping onto the flats or getting onto them from the cylinder bearings—siphoning out and running to the edge of the cylinder where it is thrown onto the flats—will cause fibre to adhere to the wire at the oily places.

Improper setting of the flat stripping comb thereby not removing strips clean, allows the flat revolving brush to press the clinging fibres down into the bottom of the wire.

Dull or faced wire caused by lack of grinding or contact with cylinder wire will load up. This is especially true with faced wire, because wire so injured shows a slight hook pointing back from the point of the teeth.

Barbed wire caused by too long or too heavy grinding shows a hook pointing forward from the point of the teeth. Fibres will adhere to either faced or barbed clothing sufficiently to escape the action of the stripping comb and thus become imbedded into the wire by the action of the revolving brush, which if set a trifle too deep into the flat wire, takes especial delight in filling up the flat wire rather than cleaning it.

Frequently new cards show this defect of filling in of the flats and the cause can be located in the wire of the flats being rough on the sides. Repeated burnishing with the burnishing roll will benefit this trouble. While the roll is at work, a little black lead dusted on will help to give a good polish.

Overcrowding a card with low grade stock will cause the flats to fill. Not frequent enough stripping of cylinder will have a like effect.

A slipping flat chain driving belt will allow the flats to move too slowly along the cylinder bend and thus become excessively overloaded, some to the extent of being completely filled with short fibre and foreign material. The stripping comb will not remove all of this and it gets driven to the bottom of the wire. Flat strippings that get crowded down into the wire so as to get below the knee, stay so located.

Old flat chains stretch and cause openings between the flats as they ride on the bend. Sometimes these openings are fully three-eighths of an inch in width. This condition permits fibre to blow out between the flats and tends to imbed the fibre in the flat wire.

Too high a speed for the cylinder or too wide a setting at the top of the back knife will cause this trouble.

To locate the trouble in the mill in the question of "Ben," where there are two entire rooms affected, I should look for rusty or rough wire on the flats. I would also see that the revolving brush was not set too deeply into the flat wire. You want to get a brushing effect with as little bending of the bristles as possible. Too deep setting bends the bristles backward and causes them to be dragged through the wire and instead of removing what fibre and dirt there is, it merely presses it down to the very bottom of the wire where it forms into a hard cake.

To get rid of the caked fibre and dirt, I would put a roll covered with stripper clothing into the flat grinder stands and belt it to run at a low speed with the teeth of the wire pointing forward in the same direction that the wire teeth point. Set the roll deep enough to start the material in the clothing and as it loosens up, set a trifle deeper until all is taken out. Grind the wire lightly and then put on the burnishing brush, setting it fairly deep to get a good polish. Dust on whiting or black lead to assist. Watch the flats closely and at the first sign of loading up again, put on the roll and then burnish again. It is well to run the revolving brush backwards while the roll covered with stripper clothing is at work on the flats. This will assist in raising the fringed edge of the matted fibre. Regage. (Conn.)

Announcement has been made that on and after April 1st, 1919, the business and affairs of John Curtin, Inc., will be taken over and continued by John Curtin Corporation, 46-48 Front street, New York City. The liabilities of John Curtin, Inc., are assumed and will be paid by the new company, which will be under the same management as the old corporation.

THE UNIT HEATER

was first placed in use in 1870 by B. F. Sturtevant, founder of the B. F. STURTEVANT COMPANY. Since that time, through careful study and engineering practice, the present day Portable Unit Heater has been perfected. It is just one of the large and growing family of

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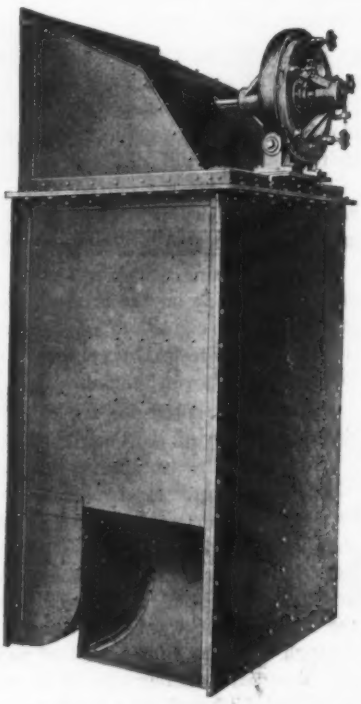

Independent Unit Heater.

It's relation to the heating of shops and factories is similar to replacement of the old line shafting, by the unit motor drive.

It eliminates expensive, cumbersome overhead piping; it warms just the portion you wish heated; the exhaust steam from the small turbine, driving the disc or propeller fan, heats the steam coils. It's economy is apparent, and it's efficiency has been proven.

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Points on Carding.

EDITOR COTTON:

Starting at the back of the card the laps should be laid up in the lap racks before any of the laps feeding in run entirely out, so the new laps can all be set in at one time on the entire line of cards. The pieces, if any, can be run up on the end card, but if all card belts are kept in good shape there is not apt to be any pieces, as pieces result from one card not running as fast as another, caused by more belt slippage on one than the other.

The extreme edge, or last part of the lap should be broken off and not allowed to feed in, as these edges often choke the lickerin, and knock the mote knives from their settings, or break the mote knife bracket.

When the lickerin becomes choked the feed plate should be backed off, the choke removed by turning the lickerin backwards and after the choke is removed the feed plate and mote knives reset. The laps should be pieced end to end and not lapped over any, as this causes a thick place in the web.

The working edge of the feed plate should be examined occasionally and if scarred up from being set too close to the lickerin it should be milled off true again. The feed roller and wooden roller at the back should be examined each time the back is reset to see that they turn free, as chokes take more power to pull the card, make the belts slip and keep the laps from running out or creeling at the same time.

Anything that causes the lickerin to load makes a bad web and should be remedied; the settings of the lickerin should be watched closer than any other part of the card and reset after each grinding, for if the lickerin teeth are allowed to rub either the cylinder, feed plate or mote knives they get dull and dubbed off very quickly, and if the teeth get very dull or badly mashed they have to be re-wound with new wire, as there is no satisfactory way of sharpening them and keeping the surface of the lickerin true, which is necessary to get good work. But if the teeth are not allowed to touch at any of the settings the teeth of the lickerin will stay sharp several years.

The working edge of the mote knives should be milled off true when scarred, and the mote knives should be set as close as they will go without touching, as the combing action of the lickerin teeth, as they pass the working edge of the feed plate, have a tendency to straighten the fibres and pull them down between the teeth leaving foreign matter upon the points of the teeth for the mote knives to knock off. When the lickerin teeth are sharp the top part of the knife bracket should be set level with the card frame, and as the teeth become dull the bracket should be slightly tilted towards the lickerin.

The back screen should be set as high between the licker and cylinder as it will go without rubbing, as the lower it is set the more of a pocket there is for the cotton to gather in and come out in bunches. The lip of the lickerin screen, next to the mote knife, should be set about ¼ inch from the lickerin teeth, as this keeps most of the flyings from under the back, and allows them to go in the strippings where they are worth more.

The screens at the bottom of the cylinder should be set from a 17 to a 22 gauge with the back screen slightly closer to the cylinder than the front screen; this keeps fly from blowing out where the screens join, and the edge of the screens should be about ⅛ inch from the edge of the cylinder at all points. This keeps fly from blowing out at the sides of the card and getting chokes in between the cylinder and the arches. The lip of the front screen between the cylinder and doffer should be set about ¼ inch from the cylinder; this keeps white flyings from under the doffer.

The back plate above the lickerin should be set a 22 gauge at the bottom and a 17 gauge at the top. This will keep fly from blowing out through the flats at the back. This should be repaired if not true as it will cause a bad web.

The flats can be set a little further from the cylinder at the back than at the front, or set the same at all points, and do good work either way if the clothing on them is tight and the wire sharp, and the flats set to suit the work. Flats should be set as close as they will go without facing, but they have to be set further from the cylinder for a large production than they do for a light production.

The card clothing manufacturers claim that the wire is put in the foundation at an angle so that when the wire is bent back from working that it does not get any longer unless bent at the knee, but if a card is doing 100 pounds per day with a close setting, and the production is increased to 200 pounds without moving the setting the flats will be faced in a very short time. The flat chains should be kept tight so the flats will stay up tight to the pulleys on the sprocket shaft, or they will rub the front plate and mash the wire down on the flats and make the stripping plate rub the cylinder. They will also get out against the stripping comb, causing trouble at both places, and when the chains wear so much that the flats will not stay up to the pulley when the chains are tight, the chains will have to be replaced with new ones. After the chains are tightened with the adjusting screw as far as the screw will go, then a flat can be taken out and the chains kept tight with the adjusting screw again until it is necessary to take out another flat, but when three or four flats have been taken out, it is then necessary to get new chains.

The flats should travel just the reverse of the way they do, as this would allow clean flats all the time to finish on, instead of clean flats to start on.

The clothing on the cylinder and doffer should be kept tight, and the wire sharp, with a long point on it that will stay sharp from one grinding to the next.

The plate between the cylinder and doffer should be set at the bottom edge to a 10 or 12 gauge so as to insure its not being in the way of setting the doffer to the cylinder.

The top or stripping plate has to be set according to the amount of strips desired, but it is not a good plan to set it too far from the cylinder; but it is better to speed up the plate to get the desired amount of strips. The strips from each card should weigh the same. The stripping comb should be kept adjusted so it will clean the plate, or else the flat brush will force the cotton down in the wire on the flats where it has to be cleaned out with a burnisher brush.

The doffer should always be set as close to the cylinder as it will run without facing as this keeps the cylinder from carrying any extra load and allows it to do better work.

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The doffer comb should be set to a 10 or 12 gauge at its closest point; if set closer than this the doffer will fill up with motes and keep all the points of wire that the motes are imbedded in from doing any work, besides it makes the web and the doffer both look bad, where if the comb was properly set it would knock the motes out onto the dust pan.

The trumpet holes at the calender rolls should all be the same size, but should be large enough so that the ends won't go too slack in wet bad weather. The trumpets in the coiler heads should all be the same size and small enough to properly compress the card sliver, and the calender rolls in the coiler heads should be kept in good repair, the bearings repaired or replaced when worn.

The cans under the coilers should be doffed according to time by a watch or clock, and not when they look like the cans are full. The cans should not be allowed to run until the cotton lifts the tube gears, as it is not only stretching the sliver, but also dragging enough cotton under the tube gear to cause a choke which keeps the next can from filling up in a smooth coil, but looks lumpy.

When necessary to increase production it is better to increase the speed of the doffer than to shorten the draft, as a card will work a thin sheet of cotton fast better than a thick sheet of cotton slow.

The doffer, flats, and lickerin should all be set as close as they will go without touching and facing. The flats can be set from a 7 to a 12 gauge; the doffer from a 5 to 7 gauge; and the lickerin from a 7 to 12 gauge according to the production of the card, but the most important part is to see that the setting is done on time, as some card grinders have a way of skipping this setting and that, and maybe next time around they will skip the same setting again.

The cards should be ground every 18 to 30 days, according to the amount of work they are doing. The doffer and licker should be set after each grinding; the flats every second or third grinding; while the back should be taken down, cleaned and reset every third grinding. The screens should be taken out, cleaned and repaired if needed every 12 months. The flats should be cleaned with a burnisher brush when needed and ground with a solid roller every time the cylinder and doffer are ground, but not so long; that is, if it takes all day to grind the cylinder and doffer, one-half day ought to sharpen the flats, and the cylinder grinder should run faster than the doffer grinder, or the doffer should only be ground one-half day, as it is not necessary to grind any certain length of time, but only so long as it takes to sharpen the wire, also the time it takes to sharpen will vary in different mills.

To tell when the wire is sharp draw the smooth part of the finger nail against the points of the wire and if the wire catches hold or feels rough it is sharp. The wire should be ground heavy enough to put a long point on it, or else it will get dull again in a few days. There is very little danger of injuring hard tempered steel wire in grinding with what is known as a traverse grinder, if the emery is changed every week and the grinding roller kept up to speed. The way the wire is injured is by letting the wire get slick, or the grinding roll slow down to a speed where the surface speed of the cylinder is so much greater than the roller that it is almost like running or rubbing against something stationary, when the wire is either marked, or the extreme point turned over.

The card grinder should set up all marked wire on the cylinder, doffer and flats before putting on his grinding rolls; he should also examine his lickerin to see that it is not mashed, and get chokes out at all places where chokes accumulate. When grinding the flats he must see that both ends of the flat come under the roller at the same time, and that the speed of the roller is the same when the flat comes from under the roller as it was when it started in, or else the flats will be ground off more on one side, known as the toe of the flat than they will on the other side, known as the head. This is caused from the band being too slack, and if continued will cause the toe of the flat to be ground off to the clip while the head doesn't get enough grinding. If, after grinding and setting up a card, it does good work for a few days, and then goes to doing bad work again, there is too short a point on the wire, caused either from too light grinding or too long between grindings. The card grinder should examine the web on each card he has charge of at least once a day and if the web doesn't look right, find the trouble and remedy it before the overseer has to call his attention to it. A card grinder ought to be paid more than any other section man in the mill, for he has to work all the time and part of his work is dirty work. When he is not at work, it is not because his job is up so well, but because he is neglecting it and letting it run down, and for this reason he should have just remuneration and be required to give his work all the time he has. A. L. A. (Ga.)

Catching Specky Yarn.

Editor Cotton:

I have been so accustomed to being called to the cloth room during the last few months that it makes me think of the old saying, that life is just one thing after another, however, I suppose it is necessary as every time I am called down there I go back to the card room and find something that needs better attention. It makes an overseer feel like he has been off of his job for quite awhile and has so much to catch-up and get acquainted with.

We, like most mills, have been under a terrible productive strain for the past four years, and the scarcity of labor has forced us to use operatives that were not skilled in the production of cotton goods. During a visit to the cloth room some time ago I noticed quite a lot of brown bunches, or gouts as they are sometimes called; on going back to the card room, careful attention was given to the wiping out of the roving frames, and the drawings as well, underneath of the steel rolls (roller beams as it is sometimes called). This was watched for quite awhile and the work did not seem to improve as it should according to the amount of difference in the changes in the cleaning of the frames, so something else had to be resorted to. The next was the taking off of all the clearer lids. These were taken to a suitable place and by the use of compressed air the lids were blown off clean and a piece of card clothing used to roughen the space for the clearer waste to accumulate on. With this all neatly done, we thought the trouble was over and the thing was fixed, but not so, still the brown, and dusty, gouts came. Of course all this work was not in vain for it had its effect, and for the good. Then nothing was done for quite awhile but to

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watch and catch-up with whatever we could that would make such places in the yarn.

Finally, on a Friday, we found a clue. The cards in this mill being driven by electricity, the electrician came around to clean his motors, which he did by the use of compressed air and a hose pipe. With the pipe attached he would proceed to blow off the lint and then we noticed an evil in the elements settling around the work. Tracing this on through into the yarn we found our trouble.

Motors accumulate quite a lot of dust and dirty matter, and when they are cleaned off a cloth should be spread underneath them to keep the work clean. They are not supposd to be cleaned but about twice a month that is if they are properly cleaned while at it.

All this goes to show how hard it is sometimes to locate just the thing that is giving the most trouble, but all the work done before the real trouble was found was not in vain as it was all to the good.

T. A. D. (Ga.)

Self Weighting for Uneven Staple.

EDITOR COTTON:

I see in the March issue of COTTON where "A. B. C." is trying to put the damper, so to speak, on one of the best methods of running uneven staple of cotton.

I wondered, after reading his letter, if he really understood what I was trying to tell. It is a wonder the work ran at all, before spreading the rolls and removing the extra friction by taking out twist. I am not going to argue the point with "A. B. C.," but I am going to give the following formula on the subject which may help him and others to understand what self weighting really is.

When there is too much twist in the roving, and the average length of the staple does not exceed, or equal by 1-16 of an inch, the distance from center to center of the first and second rolls, the only remedy is to take out twist, or weight upon the first and second roll.

Remember, draft takes the twist out of the roving. But also remember the law of compensation is never still, and works here as elsewhere. When we increase the weight on the second roll, we increase the grip on the fibers; and when we increase the weight on the front roll, we increase the grip also, which insures the drawing apart of all fibers. When we remove the weight from the middle roll and at the same time have too much twist in the roving, the middle roll then simply holds the twist, and the drawing efficiency is lost, simply because the middle roll does not grip the fibers as it should.

In other words, "A. B. C." tried the right method, but evidently went at it in the wrong way to get results. The reader can see at a glance that the back roving being used would cause trouble with or without roll weighting, for the reason of the two extremes existing, extra twist, and uneven staple.

Now, why is removing the weight from the middle roll the best remedy for running uneven staple? If the same leather middle roll is used, it should be clear to any experienced spinner, that as much twist as possible must be taken out of the roving. Because, the middle roll is called on to check and hold the fibers of a greater length than the distance between the two rolls. In many cases, the roving is doffed when one-half full, so as to make the bobbins lighter and enable the roving to be unwound with less twist. In some cases, metal rolls are used. The idea is to have just enough twist in the back roving, and just enough weight on the middle roll, so the middle roll will allow the long fibers to be stronger than its own grip and allow them to be drawn from its action without any injury.

Wash. (N. H.)

A Business Luncheon Discussion.

A group of executives in various lines of business were having lunch together. In the natural "shop talk" that followed, the discussion gradually crystallized around correspondence problems.

"Tom," said one across the table, "The Dictaphone would ease up your troubles just about 100 per cent, and no exaggeration. There are many reasons why it would do so—I think the biggest reason is convenience.

"I know that in my own office, when I have a letter, memo or sheet of instructions to get off my chest, Dictaphone convenience is the first thing I think of.

"The Dictaphone is always at my elbow, within easy reach. And so I can always get at it when I need to do my dictation.

"It's really surprising how much this matter of convenience counts. An hour or two of fast uninterrupted dictation the first thing in the morning, and there is the bulk of my correspondence cleared for the day.

"I get the completed letters back for my signature hours earlier. I have more time to think, plan and dip into the larger constructive phases of executive work. And often on an afternoon, when feeling tired, nervous and greatly in need of exercise, I can spare the time to grab up my golf sticks, motor to the country club and forget work and offices for a few hours."

"Now, how about the girl's side of it?" one of his interested listeners piped up.

"Why isn't Dictaphone convenience the big idea there, too?" was the reply. "Of course it is.

"For the operator can pretty well measure her work from hour to hour. She takes the dictation directly on the typewriter. None of the inconveniences of jumping up and going to this and that executive's office to take dictation. None of the time-eating inconveniences of waiting to take dictation while outside and inside interruptions keep holding up the dictator.

"She pegs away at the keys at a steady, calm-nerved pace. And she thinks of Dictaphone convenience, because she gets so much more done while working at her normal speed. And she thinks some more about convenience, when now and then with her regular work done, she finds an hour or two to try her hand at interesting work of a more executive nature. And she thinks most of all about Dictaphone convenience when she finds herself aboard her regular car or train night after night, bound for home and an early dinner."

"I suppose next," one of the men jokingly put in, "you'll be claiming that you can talk to The Dictaphone in your sleep."

"Not so much of a joke as you think," was the laughing

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That depends upon the system of ventilating you select, its initial cost, the up-keep cost, how you figure the ultimate costs, and the percentage of efficiency.

I. The system should be designed for your needs by trained Engineers, specializing in ventilation.

II. Its initial cost is determined by the particular problem you have. Any system which does not fit your requirements is dear at any price. It should be designed to handle your problem with the least possible outlay of capital. To be sure of that, you gamble needlessly unless you take advantage of our Sixty years of experience, and of the services of our trained Engineering Staff.

III. To figure ultimate costs is difficult. See how the Hamilton Watch Co., of Lancaster, Pa., figure it; Here is their plant:

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It might be of interest to you to know that we installed this system at a total cost of approximately $2800.00, about $100.00 per machine, and if the cost were $28,000.00 we would not be without it.

We regard it as a most valuable addition to our business, which is proven in many ways; the health of our employees, numbering 785, is very much improved over other years, and the Relief Association has made no assessments and has had very few sick benefits to pay, and it has done away with much rust.

I offer you this for the good of both yourselves and any other factory who desires to equip themselves with this really valuable appliance to their business.

Wishing you every possible success, we remain, etc.

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IV. **Sturtevant** AUTOFORCE VENTILATORS use Nature as the source of energy, so you have no operating cost. We guarantee their efficiency which is 100% to 200% in excess of any other type of natural ventilator.

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response. "The Dictaphone is convenient enough to use anywhere you carry your brain and voice. It's light and it's portable, and there is a traveling-case specially made for it. You can dictate to it in your home, in your motor car, in your hotel room or on a railroad train if you think you need to. The Dictaphone is just as convenient as that."

"Well," spoke up another of the group over his last mouthful of pie, "I'm mighty glad to hear you talk that way about Dictaphone convenience. I use The Dictaphone myself nearly all of the time. And for my part, I don't see how any business man can get along without it."

An Airtight Ash Pit Door.

A perfectly tight ash pit door is essential to prevent combustion in the ash pit and also in preventing excess air from entering the boiler through some types of stokers. Plant economy and ease in handling ashes are features which should be carefully considered in choosing ash pit doors, not only for the ash pits of new power houses, but also for old plants.

Consulting engineers and architects are often required to draw detailed specifications for ash pit doors, because

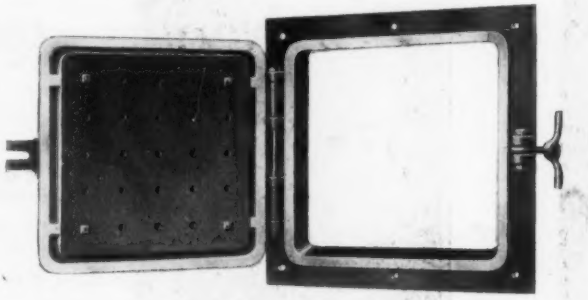
The Door Closed and Fastened.

they have been unable to find a satisfactory article on the market as a standard piece of equipment. Contractors engaged in setting boilers are also often required to construct a cheap, steel door on the job because they had been unable to purchase a good, cast iron door especially designed for the purpose.

The American Steam Conveyor Corporation, Chicago and New York, specializing in all forms of ash disposal, is manufacturing the American ash pit door. This door has been produced as the result of careful tests and study, covering all points essential to successful operation and durability. It has been the experience of these ash disposal engineers that an ash pit door should be of ample size to allow easy removal of the ashes from the pit, but should not be unnecessarily large. If too large, it is impossible to keep the door from warping and thus leaking air, and it is also too heavy to be handled easily. A 24 x 36 inch door is ample for the largest pit and this is the size recommended for ordinary use. Three other sizes of doors are also built of the same general design. These are in size, 18 x 18 inches, 22 x 26 inches and 24 x 24 inches.

The frame of the American ash pit door is cast of iron of ample strength for all conditions, with the hinge and locking lugs cast on. The frame is of an angle design and sets well back into the setting. It is fastened into the pit wall by four bolts, one in each corner. The bearing surface is carefully machined. The hinge lugs are of ample strength to meet the hard usage to which these doors are subjected in operation.

The door itself is of cast iron and is provided with a heavy ventilated cast iron liner to prevent contact with



The Door and Frame.

the hot ashes and consequent warping. The bearing surface of the door is also machined to make an airtight joint with the frame.

The hinges are of the floating type and two are provided. The hinge bars are pivoted to the frame and carry the door at the center where it is pivoted to the bars. This gives a perfectly distributed pressure over the door and keeps a tight joint at all points with no possibility of a clinker in the corner of the frame opening, breaking or bending the door by a wedge action. It also allows the door to be swung entirely out of the operator's way.

This door is easily, quickly and tightly locked by means of the wing nuts at the end of the hinge bars. In the case of the 24 x 36 inch door, two locks are used. The other sizes have but one locking lug. The manufacturers of this door will be very glad to furnish additional information on request.

Beginning March 1, 1919, The Stafford Company of Readville, Mass., builders of Stafford standard silk looms and dobbies in addition to their well known automatic looms, will be directly represented in Paterson, N. J., and vicinity by John Cunningham, who will shortly move to Paterson to live. Mr. Cunningham has been with The Stafford Company for many years, first in the mechanical end of the business and for the past few years in the sales department in the silk field, where he is well and favorably known. Mr. Cunningham succeeds L. H. Rothschild of the National Mill Supply Company, who for several years past has acted as local agent for The Stafford Company in Paterson.

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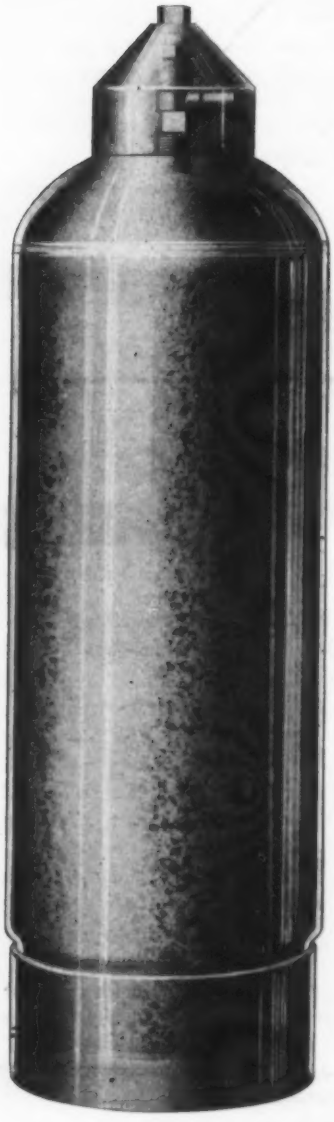

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Influences Affecting Cotton Goods Exports.

BY L. W. ALWYN-SCHMIDT.

By far the largest part of our exports in cotton goods consists of so called staples. The position of staples in foreign trade differs a good deal from that of other kind of merchanidse. Staples like articles of food or raw materials are always in demand. They are an article of consumption influenced very little by fashion. Their market price rises and falls subject to the general condition of the world's market and is rarely influenced by purely local conditions. It is feasible that a staple article, shipped to one market, might be taken up again and shipped to another without any appreciable loss in quality and value. At least three quarters of all foreign trade is carried on in staples and the international commerce in cotton goods certainly is a considerable source of income to the merchants, shippers and bankers of the world.

The American cotton goods industry has only quite recently again entered the world's market in cotton staple goods. Cotton piece goods for a long time were the monopoly of the English and German cotton industry and American piece goods had to establish at first a reputation in this kind of trade. True there were certain lines of American piece goods which had made for themselves a very good reputation, dating back in some cases as far as the middle of the last century, but with the decline of the American merchant marine and marine trading, also this trade in staple cottons had lost its importance. Now the long expected change has come. During the last years the American exports in staple cottons have grown immensely and there are plenty of indications that this growth will continue.

Foreign commerce, therefore, has gained a good deal in importance for our cotton manufacturers and they will have to give this side of their business more attention than they have been inclined to do in former years. The export merchant and exporting manufacturer of today, especially if interested in the production and distribution of staple wares is a vastly different being from the merchant of fifty years ago. Where our forefathers were dealing in thousands of yards we are dealing today in hundred thousands. An export of a billion of yards of cotton piece goods does not seem for us unattainable. Naturally, conditions have changed. The American cotton merchants of the middle of the last century were looking to the coast of Morocco, to the fringe of Asia and to parts of the two American continents for their trade. Our cotton merchant of today deals with the whole world. In a few years he will have at his disposal what may be the biggest merchant marine o the world and behind him an industry second to none. It is not the question of getting sufficient goods for export, but rather of disposing of a steadily increasing flow of cotton goods which can not be sold conveniently in the home market. The cotton merchant of today is not only a merchant, he must be also a banker and an economist. He must understand his markets and the underlying causes affecting demand and supply. He must study exchanges, shipping policies, labor situation and many other questions which did not trouble the heads of our cotton merchants of days gone by. And his knowledge must not only include conditions in our own market but also those in others, so that he may be able to judge correctly the competition he will have to meet in the future.

It is this international aspect of the cotton piece goods business which is practically new to our cotton manufacturers and exporters and which therefore demands some explanation.

INFLUENCE OF SHIPPING RATES ON EXPORT OF COTTON GOODS.

Cotton goods are today no more carried by individual shipping traders from one country to another and exchanged for the products of that market. Modern mercantile organization has found better and more convenient means of distribution. But the influence of the shipping situation on the cotton goods market remains, nevertheless, just as great as it was a hundred years ago. To sell cotton goods to the world requires the possession of a large and efficiently operated mercantile marine. It is no coincidence that the American influence on the cotton goods market of the world declined with the decline of the American merchant marine. It is also no coincidence that the English cotton industry is gaining headway as fast as the growth of the English mercantile marine allows. Also that Germany built up her extensive cotton goods business supported by the possession of a powerful merchant marine.

It is not easy to explain why this should be the case, but most likely the same factors act on the distribution of cotton staples which influence the distribution of all other staple goods. These goods have to be carried cheaply. The port which concentrates the largest number of ships offers the best advantages for the distribution of staple goods. London and Liverpool, therefore, are excellent distributors for staple goods. The importance of the two ports for the distribution of cotton goods is strengthened by the fact that England is continually importing raw materials of

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all descriptions and therefore, cheap shipping is always available for export. The American cotton goods industry is not so happily situated in this respect as the English, or the German, to use another example. The big shipowning countries of the world look to America not as a supplier of industrial goods but rather as a provider for raw materials and food stuffs. What they desire to have from us are these two groups of commodities and they naturally care little about our cotton goods which they make themselves in great quantities. The ships of England and Germany, before the war, came to our ports not for the purpose of carrying our cotton goods but to get the cotton. If we wanted to ship cotton goods we had to look out for ourselves.

The now rapidly growing American merchant marine will change that. We shall have in a short while sufficient ships to carry all our industrial products, including cotton staples, and we shall not need to worry more about this difficulty. But having the facilities of carrying can not be of much use if we do not apply them to the best advantage. It is this side of the future development of the American ocean carrying business which will interest principally the American cotton goods manufacturer and exporter.

STUDY OF SHIPPING RATES ESSENTIAL TO EXPORTING.

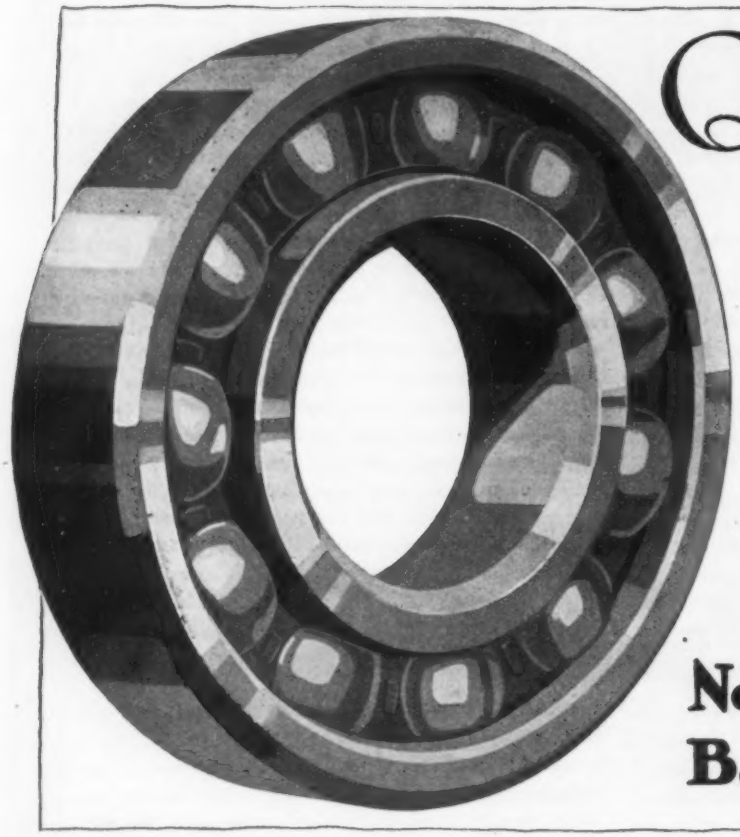
There seems to be little doubt that our cotton goods are manufactured more expensively than those of the cotton industry of Europe. The expected increase in the cost of labor and materials may add somewhat to European manufacturing costs, but there appears to be little hope that Europe ever will approach our present wage scales and, therefore, will always be somewhat cheaper. If we want to sell our cotton goods at competitive prices, we must save somewhere else. We must either be content with smaller profits or we must distribute more cheaply or more efficiently than Europe. As matters are today there are certain markets in our immediate neighborhood where we can supply cotton staples at so low a price that there is little chance for the European manufacturer. In the larger export field, however, European makers as a rule are able to undercut our prices because they command cheaper shipping facilities. Where this is the case we must either retire, or will be compelled to do so in the future, or we must be satisfied with smaller profits. It is not always easy to establish exactly the markets where our goods are competitive with the European and such where we are at a disadvantage. But every manufacturer of cotton goods will have to know at least approximately, the countries where his goods sell at competitive rates. To do this he must know how much it costs to ship to these markets from European ports and how much from an American port. Our own shipping rates then should be adjusted in such a way as to give our distributors of staple goods, which includes necessarily cotton, a fair chance to compete. With more ships at the disposal of our export industries this should become possible. It requires, however, that our export merchants should have a clear understanding of the shipping problems which are involved and of the influence shipping rates exert on the distribution of American merchandize.

The distribution of staple goods in foreign markets is largely dependent upon the ability of the distributors to create outlets in the form of agencies. As there is always a certain demand for staple cottons there must be also a steady flow of orders to all those firms which are able to accept these orders and which have arranged for their collection. The firm which has the largest number of outlets, therefore, stands the best chance of getting the business. This explains why English cotton mills have done so well with this article in other markets. Not only have they been able to supply at competitive rates, but there are English cotton agents in great numbers all over the world. How important for the cotton industry the possession of such trade outlets can be was shown by the unfortunate experience of several of the leading English cotton mills in China. These mills were represented in China by German import houses which had a practically complete control of the market. The English Government liquidated some of these firms in places where it was able to do so, but it could not prevent their doing business in Chinese cities. As the English mills were not permitted to sell these firms and could not replace them by others, they lost a good deal of their Chinese business until they had adjusted themselves to the new situation. The entrance of China in the war finally did away with the principal difficulty as it then became possible to take over these German firms or at least their Chinese business.

Such trading outlets, however, are rarely of value if they sell only. To be effective they must also buy in the countries where they operate, as only by buying are they able to continue the native trade. So far our own so-called export houses in foreign countries have done little buying. This will be changed in the future as the large American shipping interests will make it necessary that we participate also in the export business of the markets to which we desire to sell. We shall then have, in South America for instance, a large number of American import and export agents who will both buy and sell and will in this way assist the distribution of American staple cotton goods.

European cotton goods manufacturers have made very good use of their agents in time of economic depressions by employing them for the purpose of disposing of their surplus stock.

The danger of overproduction of cotton staples in Europe is always very great. An enormous quantity of goods of that description are turned out and it is very difficult to arrest production if the market suddenly begins to fill up. This was the case during the year 1914 for instance, when without any apparent cause, the market in cotton goods experienced a heavy slump. Small orders only could be obtained from European buyers during the beginning of that year and also little business was reported from the colonies and overseas markets. Before the cotton mills had fully realized what had happened they had turned out great quantities of piece goods for which there was no sale whatever in Europe and very little elsewhere in the world. A systematic unloading of goods on the agencies began. Cotton mills would offer their surplus at low prices to their export buyers and buying agencies, who naturally took up promptly whatever was offered. Unfortunately not all this business was done on quite commercial lines, and it is certain that during those days the banks carried many a cotton mill on the strength of business between the mill and



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export houses, which in truth were nothing else but the agents of these mills. In a few months the markets, especially the Chinese and certain South American markets, were simply swamped with cotton goods and this practice was continued well into 1914. By a lucky chance for the European cotton mills the war came and stopped this game of loading up the agencies with surplus goods. Otherwise a smash would have been the result which might have been felt all over the world. The outbreak of the war not only turned the activities of the European cotton mills in other directions, but it also gave the foreign agencies a chance to dispose of the goods which had been sent to them. Many of the goods originally shipped at low prices in fact were sold with great profit owing to the lack of supplies.

INFLUENCE OF FOREIGN EXCHANGE.

The influence of the variations in silver exchange on the Chinese cotton goods business is known to all cotton goods exporters and, therefore, need not be enlarged upon. Less known to our exporters however is the fact that a great deal of the European foreign cotton goods business is carried to European mills by a careful handling of the foreign exchanges. London is the great money exchange market of the world and London quotations are as a rule made the basis of all foreign business in cotton staples. This fact alone has given to England a considerable influence on the cotton goods business of the world. In normal times the variations of international money exchange are not so important as to be able to change actually the direction of the commerce in staple goods. During the war, however, there have been continual and sometimes very heavy deviations from the so called normal exchange and the result has been severely felt all over the world. The business in staple goods is always attracted by that country which offers either the most stable exchange or which has an adverse exchange against the buying country. The latter factor deserves the special attention of our cotton goods exporters just now. Let us assume that Argentine for instance would receive better value for its money in Pounds Sterling than in Dollars. The result will be that the staple goods business will be directed to London. The unfavorable exchange rate of the German mark will no doubt force a good deal of international business to Germany, if no steps are taken to correct this situation. Our cotton industry, therefore, is interested in the maintenance of a normal exchange all over the world as the best means of preventing a disfavorable financial sentiment against our cotton goods.

Even then, however, the American cotton exporter will be at a disadvantage against his European competitor if the latter be supported by a large export and import sales organization in other countries. The importer of cotton goods in Argentine for instance who also exports Argentine produce after a while becomes his own exchange. He sells in Pound Sterling if he is an Englishman and buys in Argentine pesos. In each case he makes a profit on the transaction which in itself may be sufficiently large an income for a business to undertake all the trouble of handling that trade. The American export organization will have to be modeled in this respect on European lines as it gives the European cotton exporter a decided advantage over his American competitor.

Merchandizing staple goods will soon be a very intricate business. The markets of the world are practically empty of cotton staples, notwithstanding the great supplies which have been exported by the United States, and there will be a considerable demand. It will be up to our banks and shipping companies to provide the essential support required for the further growth of the American export business in staples. But each individual branch of the industry must do its share in the work which refers to the cotton goods industry as much as to any other.

Lancashire Notes.

(*Continued from page* 408.)

Pressure is being brought to bear upon the government to give greater facilities for export. The president of the Manchester Chamber of Commerce, in the course of a letter to the president of the Board of Trade, says: "We consider the time has arrived when every restriction which can possibly be removed from the trade in manufactured goods—exported from this country to neutral countries adjacent to enemy territories—should be removed. Take the case of cotton goods, in which our members are most interested. There are at this moment goods—yarn and cloth—to the value of six to seven million pounds sterling, all of which are urgently required by Holland, Denmark and Scandinavia for their own use, those markets being absolutely bare. Can any useful purpose be served by any longer holding back these goods at a great inconvenience and harassment alike to our own people and to their customers. Both manufacturers and merchants here are impressed by the question of unemployment. Half the looms in Blackburn and Burnley are standing idle. Very little trade is coming forward from any part of the world. Demobilization is proceeding, and whilst fresh bodies of men are daily presenting themselves in the labor market we have not enough work for those that stayed at home. Actual unemployment is quite equal in amount to what it was under the severest restrictions under the Cotton Control Board and it is unrelieved by the financial measures which that board were enabled to put into force to help work people. It cannot therefore be long before there is a great outcry in Lancashire at the growing distress."

The operatives also are loud in their protests, and the United Textile Workers' Association is asking the Board of Trade and the Ministry of Labor to receive a deputation. The deputation has been instructed to press the government to take immediate action which will relieve the distress. Joseph Cross, the Secretary of the United Association, has stated: "The trade is swiftly going from bad to worse and we are approaching a state of affairs equal to that existing at the worst period of 1914. On top of this the government has decided to reduce the rate of pay from the out-of-work donation fund. What makes this harder to bear is that we know that the neutral markets are bare of goods, that the people there are crying out for yarn and cloth and that if only some sensible arrangement could be made, even tentatively, it would give the employers an opening for their spinning and weaving machinery, and afford us just the relief for which we ask."

The matter has been raised in Parliament, where the following dialogue occurred:

W. H. Sugden (Lancashire, Royton) asked the Parliamentary Secretary to the Overseas Department whether in view of the serious and uncertain nature of the markets abroad of the Lancashire cotton spinning and weaving trade obtaining since the armistice was signed, he would take steps to obtain a report as to the possibility of opening new markets abroad, of the solution of exchange values and of the proper support to establish a reasonable and full supply of raw cotton at such price as would enable the Lancashire cotton trade to compete in eastern markets.

A. D. Steel, Maitland, replying, said that one of the main duties of the commercial attaches was to report on the possibilities of new and extended markets for goods, including, of course, textiles. He was not aware of a prospect of a shortage of American cotton for Lancashire mills, while as regards Egyptian cotton, the government had already taken the necessary steps to secure the supply.

Mr. Sugden: Is it not a fact that the Americans are exploiting the Lancashire cotton markets?

Sir A. D. Steel-Maitland: Perhaps the honorable member will put down a question about that.

Meantime, unemployment is widespread among the operatives, and is growing. Unrest may soon reach a dangerous point.

Lord Leverhulme, the great soap magnate, has made an interesting offer to the Bolton Cotton Mill Managers' and Overlookers' Association, and it has been accepted. The offer is to pay the expenses of five members of the association to America to study conditions in the States, the condition being that every man who goes writes a paper on his experiences and reads it to the association and also lets Lord Leverhulme have a copy of it. Lord Leverhulme is a native of Bolton.

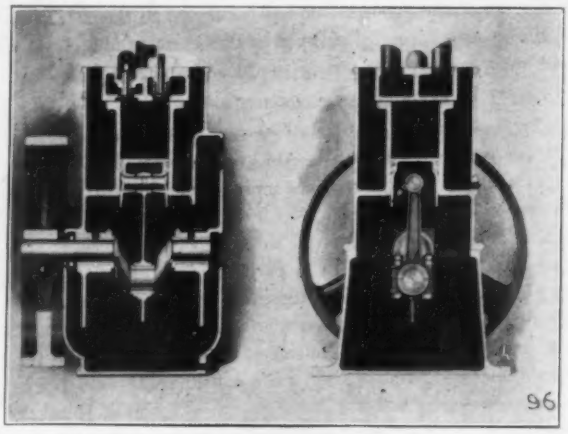
Lately the foundation fund of the Textile Institute has made more progress and a sum of almost 10,000 pounds has now been raised. The amount aimed at is 50,000 pounds. The largest gift to date is one of 2,000 pounds and the annual interest of this is to be devoted to a scheme for developing the designer's side of cotton weaving. A special committee of the Institute is already at work in this connection.

The Latest in Small Air Compressors.

When, in the emergency at the outbreak of the war, there was a sudden call for a large number of small air compressors for service where reliability was imperative, the Ingersoll-Rand Company's offer, to produce for immediate use the Imperial Fourteen Compressors which it had just completed testing out and had adopted as the new standard small compressor type, was accepted. The field performance of these built-on-hurry-order machines was watched with critical eye, but after a year's service their record was clear. They had proven themselves efficient, reliable, and inexpensive to operate.

Now, these little machines have been placed on the general market. There are four sizes and the capacity range runs from 3 to 45 cubic feet per minute at pressures to 100 pounds per square inch. The small compressors can, however, be used for pressure requirements up to 200 pounds per square inch, the horsepower needed being, of course, slightly increased. They are single acting machines of the vertical type built for belt drive. Where driven from shaft, tight and loose pulleys are supplied; where the use of independent motor is planned they are ordinarily furnished as a unit complete with motor, endless belt and short drive attachment. In the latter case a hardwood base plate is included with the standard equipments.

The machines are so well balanced as to operate satisfactorily if bolted to any solid flooring, but where permaneney of installation is desired the building of a concrete foundation is advocated. The smallest size is built with ribbed cylinder for air cooling where the service is inter-



SECTION OF IMPERIAL 14 COMPRESSOR, 3, 4 AND 5-INCH STROKE, WITH RESERVOIR WATER COOLING.

mittent and with water cooled cylinder of the reservoir type for continuous operation. Larger machines are water cooled only, employing the reservoir jacket system except that, in the case of the largest size, a closed jacket for connection to pressure system is optional. In this connection it is worth noting that the reservoir cylinder design affords unusually ample water capacity and that both cylinder barrel and head are cooled. The manufacturer states that a single filling of the water space will suffice for a 10-hour day's run.

In general design the Imperial Fourteen Compressors remind one strongly of an automobile engine. There is the same drop-forged crank shaft and connecting rod, the die cast renewable bearings, the automatic splash lubrication system and general ruggedness and simplicity which have come to be recognized as guarantees of satisfactory service under all sorts of operating conditions.

It is pointed out, however, that these little units were designed to meet exacting efficiency tests and that, while simplicity was sought, efficiency was the outstanding requirement.

The annual meeting of the American Cotton Manufacturers Association, the Marlborough-Blenheim, Atlantic City, May 27, 28.

The annual meeting of the National Association of Hosiery and Underwear Manufacturers, Philadelphia and Commercial Museum, June 3, 4, 5, 6.

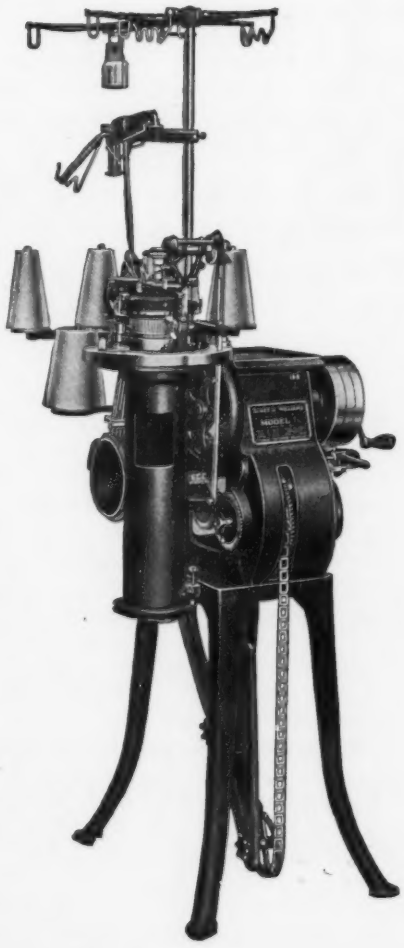
The Knitting Arts Exhibition, Philadelphia Commercial Museum, June 2nd to 14th inclusive.

The World Cotton Conference, New Orleans, October 13, 14, 15, 16.

KNITTING SECTION

The Attention of Manufacturers of

WOMEN'S HOSE



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Fashioned Welt Machine

MODEL K

This machine produces women's hose with an inturned knitted welt similar to that produced on full fashioned machines. The machine has all the features of our other models—each stocking being dropped from the machine complete, except for the looping of the toe. It is fitted with five yarn changing fingers, inserts an "anti-runback" course, and, the welt being knitted on the machine, has all the elasticity of the fabric and may be made as wide as desired.

Write for samples and further information

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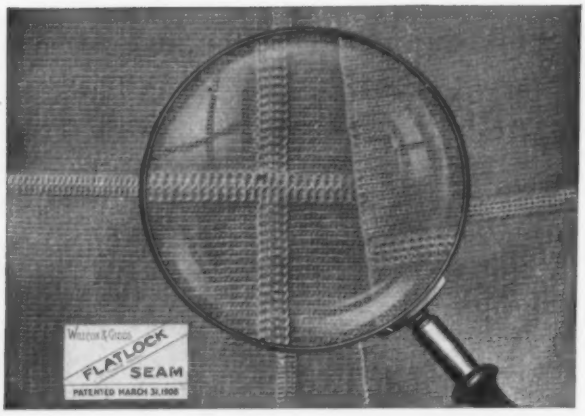

With the last salvo of artillery on Nov. 11th the World War came to an end and the new era of reconstruction began.

This great change affects not only the political relations of many nations, but their commercial life as well.

Greater attention must now be paid by those who make and those who sell knit underwear, to the building up and maintenance of civilian trade by the study of fabrics and their finish into garments to meet the discriminating tastes of the wearer.

Let us resolve from this time forth that American goods shall be known the world over as the best type of merchandise, by embodying in the products of our plants all improvements that will make our merchandise a better article for the merchant to sell, and for the consumer to use.

The Flatlock Machine is the latest important improvement in the Knit Underwear industry. The superiority of the Flatlock Seam upon its introduction was quickly recognized, resulting in its instant adoption by the United States and Great Britain for the soldiers and sailors.

When Flatlock seamed knit undergarments are shown to prospective civilian customers, they, too, are led at once to see the possibilities of greater service and comfort in a seam that is flat, thin, soft and strong, as well as elastic, and that will not rip nor ravel.

While formerly a seam, only approximately flat, was made in TWO operations, today, an absolutely flat seam (as thin as the fabric) is produced in ONE operation on the Flatlock Machine. This, of course, is an *economy to the manufacturer*, and there are alredy nearly 300 mills in the United States, Great Britain and Canada using Flatlock Machines and ready to supply knit underwear seamed with the Flatlock Seam.

The Flatlock Seam will help materially to sell the product of *your* plant because it makes better merchandise for both merchant and customers. The demand for Flatlock seamed underwear is becoming more and more insistent. Unless you are already using Flatlock Machines, you should investigate their merits.

FLATLOCK—"The Seam that Sells the Garment."

Trade Mark

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A Forecast of the Future*

It was with some misgiving that I accepted the very kind invitation of your distinguished secretary to appear before you. Since revolving the matter in my mind, however, I have been congratulating myself that there was afforded me, as president of the National Association of Hosiery and Underwear Manufacturers, an opportunity to carry to you a message from the knitting industry of the United States.

The Southern Wholesale Dry Goods Merchants, I am told, have an organization strong in numbers and conspicuous for activities. This I can readily believe, knowing as I do many of your members intimately and enjoying an intimate acquaintance with your able secretary, and this belief is supported by the presence here of many of the foremost distributors of this country, representing very large commercial interests in the South.

I am a firm believer in associations. Their value to the various trades cannot be over-estimated and, as an adjunct to the government during the war, out of which a signed peace soon will have come, these associations, it is universally acknowledged, played a part which went far toward clinching victory earlier than was contemplated.

Your organization, the Southern Wholesale Dry Goods Association, and my organization, the National Association of Hosiery and Underwear Manufacturers, and doubtless every other trade association, responded in no selfish way to the government's every call; all massed in a powerful civilian division for supplying the sinews of war.

It may be ancient history to go into our joint achievements while the fighting was going on, but I just want to refresh your memory as to the extent to which you merchants, many of you, and the knitting manufacturers responded to the demand for hosiery, underwear, etc., during the war, and, with this in mind, I will quote from a report of Mr. Lincoln Cromwell, of William Iselin & Co., New York, who was chief of the Knit Goods Section of that often annoying but very useful War Industries Board.

During the period of the war, there was bought for the Army, Navy and Marine Corps, 14,603,558 dozens of underwear; 14,507,253 dozen pairs of stockings and more than 3,000,000 dozens of miscellaneous knitted articles. When you recall the visits of emissaries of the government who came to your stores and asked for all the socks and shirts and drawers you could spare, and how willingly you made sacrifices in parting with those articles when your civilian customers were clamoring for deliveries, you will, I know, appreciate the uncomfortable position of manufacturers who were compelled on more than one occasion to say to you that, for reasons beyond their control, they could not ship all you had bought. It became a monotonous story, one that in many instances was accepted with a grain of salt. I believe it might be possible now to make up the deficiencies in your stocks traceable to the inability of manufacturers at that time to perform their part of their contracts with you, and I can assure you there will be fewer imperfections, for then all of us were suffering for want of efficient help.

Again are we arrayed side by side, this time for winning a bloodless but by no means an unimportant battle—the struggle involved in the reshaping of our affairs, readjusting values and, in every sense, adapting ourselves to the new situation which came to us as a legacy of the fighting overseas.

At the conference of knit goods buyers and knit goods manufacturers in New York in January last, when an honest effort was made to reconcile differences which appeared to have arisen between the two interests, I believe it was a southern manufacturer who was the first to extend the olive branch by committing his mill to the guaranteeing of its prices against reductions. He was followed by a manufacturer from New York who showed the same yielding disposition. I am not so sure that the price guarantee is a cure for the evils that have beset the trade since the market became unsettled with the sudden transition from war to peace and I believe it is in evidence that some of the distributors who urged it as a policy have found it to have been a boomerang, in that certain retailers have wanted not only a guarantee to date of shipment, but for the entire season. However, if that conference accomplished only little or nothing at all, failure cannot be ascribed to lack of honest endeavor, and I feel quite certain there will be no absence of cooperation and endeavor among co-related interests for arriving at a basis upon which all of us can trade safely and profitably, even in advance of that period of large constructive activity, the dawn of which can be discerned in the preparations under way for going ahead with public works, road building, the erection of homes and factories and the rebuilding of railroads and adding to their equipment. It's in the air, gentlemen, and I sincerely believe that in the last few months we have seen lower price levels than will prevail for a long time, during which time much of the world devastated by war will be rebuilt, re-equipped and put on a thoroughly modern housing and productive basis. Let us not take alarm at moderate reactions and temporary setbacks. They are to be expected, but the long pull—the pull that means sound business and prosperity and happiness, is what we should set our minds upon.

Just about three months ago, in an address which I delivered at a meeting of a large number of knitting manufacturers in Charlotte, N. C., I expressed myself as optimistic. I have not had occasion to revise the views which I then expressed, yet am free to confess that the evil day was prolonged a little longer than I contemplated; but do not forget that the further our descent in volume of business, the sharper will be the rise and the longer must the rise continue. When, in January last, I assumed the hazard of predicting higher prices for cotton—prices so high that yarns and finished product would have to be materially advanced—I predicated my forecast on the stronger demand that I then believed would develop and still so believe. I did not take into consideration any decrease in cotton acreage, which now appears to be generally favored, therefore, I am more strongly convinced than ever that cotton is due for a rise and that with the higher price of the staple there will be unavoidable increases in cost of production and prices to distributor and consumer.

The area planted in cotton in 1918 was 37,073,000 acres. From the best information that we can get so far, the indi-

*Extracts from the address of T. H. Johnston, Knoxville Knitting Mills Company, Knoxville, Tenn., before the meeting of the Southern Wholesale Dry Goods Association, Louisville, Ky., April 15 to 17, 1919.

cated acreage for 1919 is 31,177,000. The weather has been favorable for crop preparations in 60 counties, partially so in 28 and unfavorable in 551. In most sections the rainfall has been excessive. The indications are that in states where commercial fertilizers are used there will be a reduction of about 26 per cent as compared with last year. The labor situation is very discouraging and more than 45 per cent of the counties heard from report the situation is more or less serious. The supply is not only insufficient, but wages are extraordinarily high. The reason for the 26 per cent reduction in the use of fertilizer as referred to is due to the increase in price of about $10 per ton. On an investigation covering an area embracing 639 counties, the reduction in acreage will average about 16 per cent as compared with the area planted last year.

We must remember further that the stocks in Europe are down to less than half a million bales, when their normal stock would be 3,175,000 bales. Germany who alone uses 2,000,000 bales of cotton, has had practically no cotton for four years. To replenish their stock alone, it is estimated that she will need 4,500,000 bales of cotton. The only question now is that of transportation and the lifting of the embargo, all of which we believe will be cleared up soon after the signing of peace. We believe that material assistance will be rendered by this country as to financing exports to other countries, as there are quite a great many plans under headway working to this end. You are also familiar as to the large movement of exporting of finished goods to other countries. A recent order was received in this country by one of our southern mill men, who recently went to England, for 350,000 dozen goods for export. A large Pennsylvania mill has 250,000 dozen goods on order to go to Holland. For South America, we now have 268 ships taking goods to that country.

In view of these conditions and the material improvement in business in this country, we look for a very great business and a very heavy demand for everything that American mills can produce, and we believe before long we will see things taking a very definite shape in this direction.

It is not my purpose to make any special plea in behalf of the cotton grower or the spinner who converts the staple into the yarns which we, as manufacturers, use in making up a large part of that which you are engaged in marketing, but I believe it is fitting that I direct your attention to the Farmers' Bulletin 641, of the Department of Agriculture, dated November 23, 1914, which gave what purported to be careful averages covering the various items in the cost of cotton production in the leading cotton states and for the cotton belt as a whole, as of 1910, showing an aggregate average cost of 8.30 cents for a pound. Fertilizer was reckoned as costing one cent per pound of cotton. Preparation of ground, planting, cultivation, gathering and ginning were estimated as costing in the aggregate 5.36 cents.

In each of these operations or processes, labor was the chief item of cost. It is not necessary to go into the increase in the cost of labor or of food, for finding warrant that the labor cost of growing cotton has increased at least 100 per cent. To speak of a 200 to 300 per cent jump in the cost of fertilizer is simply to repeat what everybody knows. Increases that the planter must pay for seed, rent and miscellaneous items, amounting to 1.94 cents per cotton pound in the government estimate of cost in 1910, necessarily have been as great proportionately as for fertilizer and labor.

It probably would be no exaggeration to say that the cost of growing cotton in 1918 was and in 1919 will be 150 per cent higher than for 1910. It will be admitted the estimate is sufficiently conservative for the purpose of comparisons, and thus there is a probable cost, as a starting point, of 20.75 cents per pound.

In former years, the cotton planter did very little bookkeeping, gave very little attention to his actual costs and expenditures for producing the crops, but today, the raising of cotton is being conducted in a more intelligent way and the cost is fixed on a more dependable basis and the farmer is getting wise to his leaks and losses, as well as his profits.

Necessarily all of us, those of other section, as well as we of the South, have a material interest in the welfare of the cotton grower and the spinner. On the prosperity of their industries depends in a great measure our own prosperity. If the figures which I have submitted are approximately accurate, it would not seem that cotton could remain at the present level. Yarns, I believe, are not commanding their value. It is common opinion that spinners will have to get more for conversion or relinquish business, either voluntarily or with the assistance of the sheriff. You are not paying production value for cotton goods. I believe you will pay more, unless the country is to go to smash and that is not going to happen in this generation. We all agree we are living in an era of unprecedented high prices. We all agree, too, that any sudden, sharp, radical descent from this level would carry with it financial disaster to industry and commerce and distress to that very important element of society usually referred to as labor—the muscle of progress.

It should be our aim, I believe, to strive toward making unnecessary any reduction in the prices which we pay for the work that goes into what we make and sell. If we succeed in that object, we will have made countless thousands happier and more prosperous and, viewed from a selfish standpoint, we will have promoted the welfare of merchant and manufacturer for prosperity for labor carries prosperity for all.

I find I have been inclining in my remarks toward the ethical, or the sentimental. Now let us take a perspective of the future of our joint interests. We have about the same population in numbers to clothe and feed as we had in the palmy days of six or seven years ago. But someone may say, "You have more machinery." This probably is true, but much of the machinery that was installed in response to the call "to arms" is not adapted to civilian manufactures and must be left out of the reckoning. Much machinery has been worn out and would have been replaced months ago but for the fact that new machines were not to be had in any great number while the war raged—and since you, gentlemen, as has been stated by many of you, have been pursuing a waiting policy, or as we manufacturers say, you have been out on a jobber's strike, manufacturers saw no immediate need for replacement. Let me ask you to make a mental note of this prediction—that so soon as you abandon that waiting policy and begin buying measurably with the consumer demand, it will be found there is a shortage of machinery, particularly when it is remem-

bered that we have lost about three months of this year's productive season.

Now I am not trying to spread alarm as to a probable scarcity of merchandise, nor am I looking for a flood of orders as a result of telling you or trying to impress you with my feelings, but if you feel as I do the day of resumed buying on a normal basis cannot be long delayed. If you disagree with me, a privilege I cheerfully accord to every person within reach of my voice and as far beyond as you please, you would be disposed to continue operating on an ultra-conservative basis. That is what all of us have been doing, and it may be well for us that we did refrain from precipitate action and did not rush headlong into what many of us regarded a clouded future. If we have been guilty of any shortcoming—if we have overlooked anything that might have accrued to our mutual benefit—it is because we were trying to "play the game" without being hurt by our friends. We have sinned against ourselves in not preparing for peace as we sinned in not preparing for war. Our sin, it may be shown, was one of omission rather than commission.

Thus far, few of us perhaps, have prepared for the business that is to come—must come—from overseas; from the war-rent countries as their wounds heal. A tremendous export trade is in the making. Do you believe there is any country in the world so well equipped as ours—the country of the Stars and Stripes—known in every nation—for supplying the wants of those people?

We have fed and are feeding them; for many months we must clothe them and today men in your lines who are operating in France, England, Italy, Switzerland, Belgium, Scandinavia, in Australia and in the Latin American republics—everywhere, almost—are knocking at our doors for merchandise, and it will be but a few days before our foes of the past will be buying our products. It cannot be otherwise; we know it and they know it. Are we prepared to sell in the markets of the world as we might? I believe we are not; we have given too little attention to preparation, and even now, there are a few timid interests which appear to be in no hurry to establish foreign relations fearing, they say that the peoples over there are without money with which to buy. That to the winds. What they have not and want, they'll get as surely as we here will and they will be coming to us to get it. The United States probably has more friends among the nations of the world than any other power. We have paid dearly in life, money and patience for the prestige we now enjoy as the foremost republic on earth. The advertising has been done at fearful cost, it is true. The results are certain, in fact, so certain are many manufacturers of our unprecedented export opportunities, that several hundred of them will exhibit their mill products in the National Knit Goods Exposition to be held in Philadelphia during the first two weeks of June. This, the first big show of its kind in this country, probably in the world, has been advertised in 48 countries, in 22 languages, through newspapers, by posters and with the aid of American consuls through the courtesy of our National Bureau of Foreign and Domestic Commerce. Merchants from abroad already are planning to attend the exposition. They have so advised the National Association of Hosiery and Underwear manufacturers, the projector of this unparalelled enterprise. They are not coming for pleasure, or to recuperate their health or to visit friends and relatives. Business will be their mission. United States textiles will go to all quarters of the globe. There will be formed lasting relationships, assuring a continued outgoing of our products and employment for more mill operatives.

Speaking of our foreign trade and the possibilities for extending it, it may be of interest to you to know that during January, 1919, the exportations of hosiery from the United States were greater than for any single month in American history. This information is contained in a bulletin of the Bureau of Foreign and Domestic Commerce, which shows that in January the shipments of hosiery to sixty countries reached a total of 872,205 dozen pairs of cotton, valued at $2,431,939, and 174,709 dozen pairs of artificial silk, valued at $872,059. Argentina was the heaviest purchaser of cotton goods, taking 197,215 dozens, while Australia took 182,063 dozens. In artificial silks, Australia bought 62,026 dozens, while Argentina bought 38,473 dozens. The following countries were purchasers af 10,000 dozen or more of cotton hosiery: Denmark, 45,610; Greece, 18,379; England, 49,168; Canada, 29,725; Mexico, 12,586; Cuba, 58,111 Chile, 36,665; Uruguay, 69,105; New Zealand, 15,524; Philippine Isands, 32,250; British South Africa, 41,620.

Countries other than Argentina and Australia taking more than 5,000 dozen pairs of artificial silk hosiery were, Denmark, 8,475; England, 17,845; Canada, 5,792; Uruguay, 5,096; New Zealand, 8,809; British South Africa, 17,162.

It is the expectation that exports will be materially increased as a result of the attendance of foreign buyers at the National Knit Goods Export Exposition.

American ingenuity, grit and capital never have failed in any emergency. The combination will not fail now. We are surmounting every obstacle to an early resumption of business on a normal and profitable scale. Our big troubles are about at an end, for the present at least.

You, as merchants, have had your troubles; the manufacturers have had theirs; neither element enjoyed a monopoly of trouble. But do you feel that we have trodden the dark valley to its end; that we are passing from low to higher levels; that activities in the next few months, and doubtless for years to follow, will be in striking contrast with the period of quiet which we are leaving?

As has been said, there is no rose but has its thorn. We enjoyed the rose and we have been pricked and torn by the thorn. Another rose is about to burst in bloom and your organization is going to be a powerful factor in that happy culmination. We only exhort you to take heed and be prepared. Doubtless in the struggle of the recent past there has been crimination and recrimination. In the mutuality of interest we may well forget the past and look forward to a glorious future. Let us all feel that we are not independent of one another, that the honest prosperity of each one is beneficial to the rest of us, that mutual interest and co-operation is the secret of our prosperity and happiness. Let us all pull together for prosperity.

The Peck Carrier.

"The Peck Carrier" is the title of a new 96-page booklet published by the Link-Belt Company, 39th Street and Stewart Ave., Chicago, Ill., and known as book number 220. It is very fully illustrated and shows many adaptations of the Peck carrier. A copy may be secured on request.

The Knit Goods Market

In the last few weeks there has been a slightly increased demand from jobbers for hosiery and underwear, but not of very great significance. Apparently there has been no relaxation of the tendency to defer purchases. Inquiries are more frequent and as a broad proposition there is a better market tone.

This is in line with the theory that stocks in store and warehouse are sadly lacking in assortments and must be getting down to a point where bare shelves are beginning to show. It is noteworthy that many of the orders for immediate delivery call for shipment by express, hundreds of cases going out each week, many of them to distant points. The only deduction is that merchants have about reached the end of their endurance in trying to escape making commitments for anything not as good as sold.

Now that a majority of the wholesale distributors have spoken, through the mid-April meetings of the Southern Wholesale Dry Goods Association and the National Wholesale Dry Goods Association, in Louisville, Ky., and Chicago, respectively, it is believed in the primary market that the buying period is about to dawn.

The jobbers, between mill and retailer, have fancied themselves in somewhat of a predicament. They wanted merchandise and manufacturers knew it; and the retailer also was in want, but sought to dictate terms that wholesalers could not with safety grant. Yet manufacturers selling the retail trade direct have been having a fairly good volume of business, running in some instances to about 80 per cent. of normal, measured in dollars.

The fact that retailers were buying and that some of them were becoming restive with the prolongation of their deadlock with jobbers and showed an inclination to divert their business direct to mills, has played no small part in giving jobbers a keener market appetite.

Certainly the country's buying power has been increased with the $65,000,000 boost in the wages of railroad employes and the addition of $13,000,000 a year to the payrolls of four of the large packing houses, and there would seem to be no good reason why the public should not be buying as normally. Yet it would be dangerous, so far as the knit goods trade is concerned, to increase production on the theory that the wage increases will give any material spurt to business. It will not be forgotten that there is a very considerable element of American society that does not participate in wage boosts. But this element does feel a greater burden in the higher costs which follow radical wage jumps, and may be disposed to buy as cautiously as in the past few months while waiting for the promised price declines. In any event, there will be buyers who, in the exercise of their right to get the goods at prices ruinous to producers, will be inclined to draw pictures of uncertainty and worse. They will be less inclined to do so when the demand begins to pinch mill capacity. Curtailment therefor is in order until there is substantial evidence that the trade is in a buying mood. This will be a continued step in the direction of stabilization.

The executive of an important central west knitting company who recently issued a letter to the trade purporting to be a careful analysis of all underlying conditions may not subscribe to this view. Referring to this survey he says: "We believe that a clear understanding of facts, not seeing visions or dreaming dreams, is what business needs as a tonic. If this course (that suggested in the analysis) is followed by all those vitally interested, commercial springs of action will be tapped, and real commercial activity will develop."

If the distributing trade can be brought to thinking such thoughts there is little doubt that there will be a response from manufacurers such as will restore activity in mill and factory.

Some very low prices for cotton hosiery that have been heard were quoted by mills in distress and by jobbers disposing of their business for beginning anew, under a different stock-carrying policy. In some instances large and substantial establishments have quoted figures so low as to excite suspicion. Some of the prices recently named by the Durham Hosiery Mills, Durham, N. C., were regarded in the trade as being too near cost of production for the comfort of smaller mills. Yet on some of its lines the Durham named higher prices than were being quoted by another very large manufacturer. Mills making a large range of lines and requiring that buyers take of each are in somewhat the position of the department store making use of "specials" for stimulating business in a general way.

Underwear has been having a much better movement since the first of April, with a large volume of business in summer weights developing. Some few mills which had been very eager for business have been booking orders for almost the number of dozens usually sold during the second period of season buying. Of course, buying of light weights was far below normal level during the winter months and there had come a vacuum which had to be filled. The Pennsylvania mills have had a material improvement, after a long wait.

When almost two months ago a New England mill announced a price of $3.75 for its line of balbriggan underwear which opened the season at $5.25 it was felt the bottom had been reached. It is understood these garments have sold as low as $3.50, but sales at that price were the exception. Manufacturers, whether in a spirit of competition or for greasing the wheels of business and starting on a new level, assuredly put prices low enough to tempt any merchant able to figure costs, make a survey of the future and finance his business, to come into the market. That knitting mill labor, much of it, has been out of employment cannot be charged against manufacturers.

Fall underwear has been simply dragging along, only a few mills being able to report satisfactory business. It is a fact, however, that establishments which have gone after business in a truly aggressive fashion have profited. An Ohio mill is so well sold up that it has every reason for believing it will close the year with fully 80 per cent of the usual twelve-months normal business, gauged by dozens.

A commission house shows orders for large and small quantities as entered each day of the week. There is not a day that the concern closes its office on a blank. The executive attributes much of the slack business to poorly

organized selling forces. He said: "If a salesman cannot go out feeling confident in the market and his merchandise he had better stay at home. I believe that most of them start out in the fear that their trip will be a failure and, feeling that way, they cannot be expected to annex many orders. We tell our men they either must sell or get off the road. They are selling."

The sales manager of one large house, learning that some establishments were selling underwear, reached the conclusion that his organization was at fault, and at last accounts educational work was being carried on in his office.

The P. H. Hanes Knitting Company, Winston-Salem, N. C., kept plugging away with their heavy cotton union suits, recently announcing a price advance. At that time the mill was giving itself little concern as to fall business, being content with what was coming for hurry delivery. The High Rock, Philmont, N. Y., also announced advances, after having early in the year tried out a reduction. The higher prices are understood to have sold more goods than the low figures. One large mill made so many downward revisions, without really getting anywhere, that it became common almost daily to hear someone inquire whether it had made any change "since yesterday."

A New England mill making light-weight underwear has been selling in better volume than was anticipated when the men took to the road, and a Pennsylvania mill quite recently has been in receipt of more orders per day than were received per week during February and early March. Much of this is new business, and in the mill's New York office there are scenes of activity that are in strong contrast with the quiet which had been prevailing.

Strongly significant is the opinion reached at a recent conference of executives of twenty non-competing very large retail stores, all in cities so widely separated that competition would be out of the question. It was agreed that the special price sales had pretty well cleaned up stocks that had been taken in at high prices; that the market now was at the bottom and that it would be not wise to delay buying very much longer. These executives felt that manufacturers were entitled to some consideration; that they had struggled manfully and patiently, and that further it were better for all concerned that mills be put in a position for affording employment to the largest possible number of operatives.

Careful students of the situation are optimistic for a long pull, not unmindful that there is dawning a period of large constructive activity. It is expected there will be moderate temporary reaction and set-backs for the next few weeks, in the general upward trend. In spite of the better market tone and the improved outlook there are a few jobbers who appear to adhere to the Bolshevik idea that by cutting the bottom out of a basket it is made to hold more.

A strong pressure on full fashion hosiery mills is expected to develop in the trade soon, since it has become commonly known that fully fourteen weeks production in sixteen mills in Philadelphia alone has been lost through a strike. These mills, all of which were closed down tight in every department, represent more than 80 per cent of the full fashioned hosiery machinery in Philadelphia. The strikers refused an eight-hour day with a 15 per cent wage increase.

Some of the departments of each of several mills could have been operated but for the attitude of the engineers. When it was found operatives were willing to return to work on a compromise basis the engineers shut off the power.

Several of the mills were having some of the operations taken care of in mills to which the strike had not spread, but even this endeavor to operate in part was kept under continual surveillance by union spies, who, mounted on motorcycles, followed to destination every truck or dray leaving a mill, the evident purpose being to establish a boycott.

While, it is alleged, some few mills in operation took over help from those which strikers had closed, other manufacturers have declined business from customers of mills which the strike caused to be idle, having sufficient orders in hand and in prospect to keep their factories employed full time at capacity.

So serious was the situation in Philadelphia at times during the strike that several leading manufacturers planned to move their factories elsewhere. Latterly it became evident that eventually conditions in Philadelphia must improve and negotiations involving removal were dropped for the time. As a result of the strike full fashioned silk hosiery promises to become very scarce, and it is not unlikely higher prices will be named on some of the stronger lines.

Mills in position for accepting hurry business in full fashioned silks have been entering some larger orders, two that might be mentioned aggregating more than $125,000. Very few cancellations of orders for these types of stockings were offered, and practically none accepted by any of the better mills.

Seamless silks, for both men and women, have not been commanding so much attention, and one large mill is reported having tried to force the market by naming a price on half hose that was under the cost of production in a smaller mill, where, however, strict attention is given to cost ascertainment. A full fashioned silk half hose priced at $6.75 even proved a slow seller, notwithstanding it was the product of a very reputable manufacturer.

Silk hosiery at even present production cost ought to prove a good asset very shortly. Japan silk has been scarce and advancing to new price levels. One of the larger New York importers did not have two weeks ago a pound of raw silk for sale for April delivery, a situation such as is seldom experienced at this season.

There have been many bright spots in the dark-brown hosiery market. A mill making general lines and selling through its representative at 346 Broadway, New York, recently booked in one day orders covering almost its entire range, and aggregating more than $25,000.

There has developed some little business in misses' 28-ounce and fine ribs. There doubtless would have been more for all if prices had not been slaughtered. In the last weeks of April the market for ribs showed some sign of becoming stabilized. Combed peeler half hose is moving along in better fashion, and in several instances orders have come to mills with no previous inquiry as to price.

Contrary to predictions heard in some quarters, there is and will continue to be a place for low-end hosiery, as is shown in the business of the F. W. Woolworth Company stores, of which there are 1,038. In this great chain of retail stores, all through the war the business in knit goods held its volume in comparison with other lines, the stores continuing to sell a pair of stockings or a ladies'

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FULL AUTOMATIC

HOSIERY MACHINES

SIMPLICITY — SPEED — PRODUCTION — QUALITY

Four important things to consider when buying Hosiery Machinery.

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Write for full particulars and samples of work.

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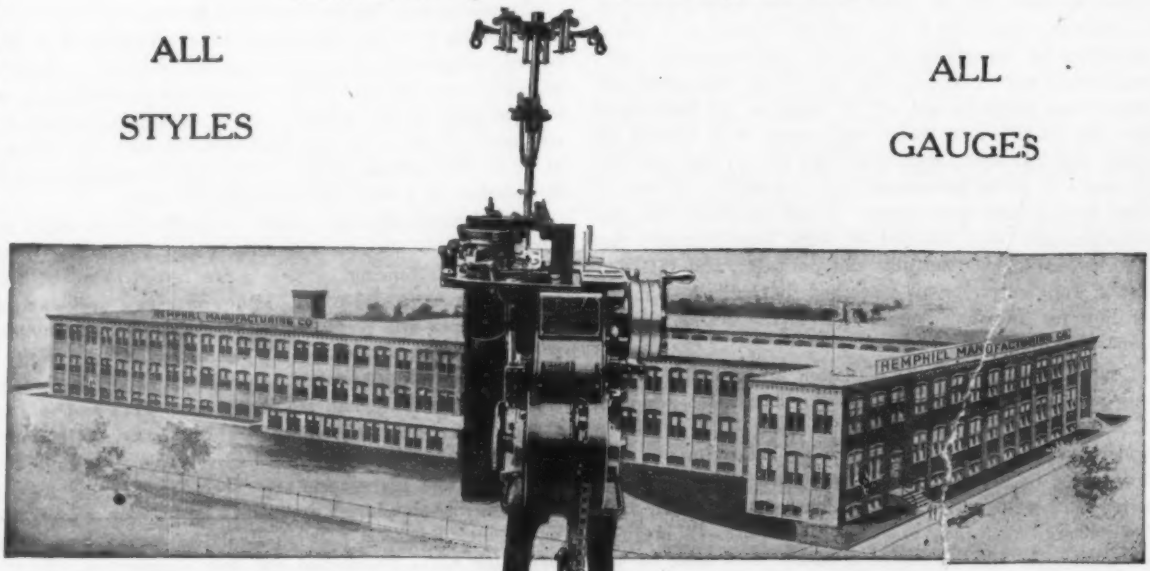
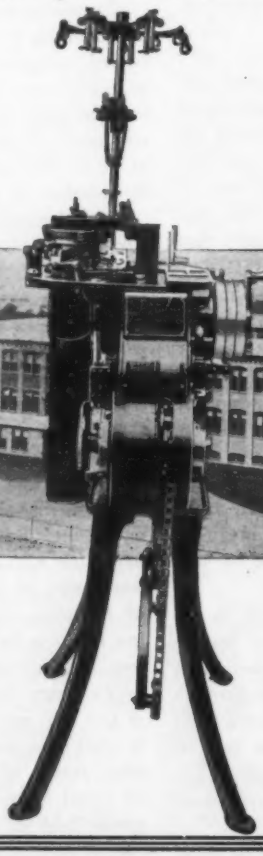




HEMPHILL COMPANY

Main Office and Factory.

Pawtucket, Rhode Island.

New York Office, Room 601 Leonard Bldg., 350 Broadway, New York.

Philadelphia Office and Showrooms, Rooms 205, 209, 210, Colonial Trust Company Bldg., 13th and Market Sts., Philadelphia, Pa.

vest for ten cents. As prices remained where they were prior to the stirring times during the war the gauging of the Woolworth business in dollars tells the same story as though measured in dozens.

The Woolworth Company's sales in 1918 totaled $107,175,749, a gain of more than $9,000,000 over 1917. The increase in the sales of knit goods was on a parity with that in the company's other lines, and it is stated by persons close to the active management that the first quarter of the present year shows an increase over the corresponding period for 1918.

It is among the probabilities that one line of socks will go on the Woolworth stores' five-cent counters. Of course they cannot be manufactured at a cost which would enable a mill to sell, without taking a loss, at a price that would make the five-cents-a-pair sock possible in even the Woolworth stores. But it may be assumed that the company's buyers have not been idle during the days that some few manufacturers were converting stocks into cash at a heavy loss for averting something which to them appeared more serious.

There is no little confusion in the trade over the action of Great Britain in refusing import license for cotton hosiery and underwear. British buyers bought heavily in expectation of being able to get the goods through. Now, they find, license cannot be procured from the British government. Stacks of merchandise for English account are in warehouses in New York and the money is in bank, ready to be paid out against dock receipts. But the Cunard line will not permit the goods to be put on the dock, so that the shipper cannot get his money and the buyer is left without the goods and is at the mercy of England.

The executive of one large concern which is heavily interested in embargoed knit goods is in high dudgeon, and is in a mood for retaliating on Great Britain by moving to have exports of cotton to English ports held up until the embargo on knit goods is removed.

That very considerable part of the jobbing trade of the United States which is embraced in the National Wholesale Dry Goods Association—to use an expression of one of the members—"has been having the time of its life" in arriving at an understanding between mill and jobber and between jobber and retailer as to a basis for guaranteeing prices against reductions. Now that the matter appears to have been disposed of, so far as the jobbers are concerned, at least, it is to be assumed that the stage at last is set for action.

The troubles of the jobbers began in January with their campaign for having mills guarantee prices. Having brought manufacturers to their way of thinking—to a very great extent—the jobbers encountered trouble with the retailers, many of whom insisted that prices be guaranteed for the entire season, instead of to time of shipment, as originally intended. The Association of Jobbers recently canvassed its members, with the result that, according to a letter of March 31, "rebates to retailers for decline on goods which have been shipped to them before the date of the decline will be positively refused, members insisting that the issuance of credits on such an unbusinesslike basis (the basis demanded by retailers) would mean a dissipation of profits and capital which could not be permitted."

It is specifically stated in a summary of letters from members of the association that the price adjustment ends when the goods are shipped. If this edict shall be adhered to retailers will not be able to throw upon other interests the burden of any further decline, and manufacturers, now that the jobbers have spoken in no uncertain manner, will have no excuse for countenancing the haphazard methods of some few mills under which they themselves have been assuming practically all of the risk. However, as the market tendency is to advance rather than decline, it need not be surprising that the future difficulty will involve deliveries instead of price guarantees.

A person widely known in the trade and prominent in the Jobbers' Association of Knit Goods Buyers and who is the underwear buyer for one of the largest distributing houses in the Central West, only a few weeks ago protested the action of a mill offering its product to other merchants in the city where this establishment is engaged in business. "We always have sold your lines," the buyer said, "and here you are offering them to small jobbers right under our nose."

"Have you an order with our mill?" inquired the salesman.

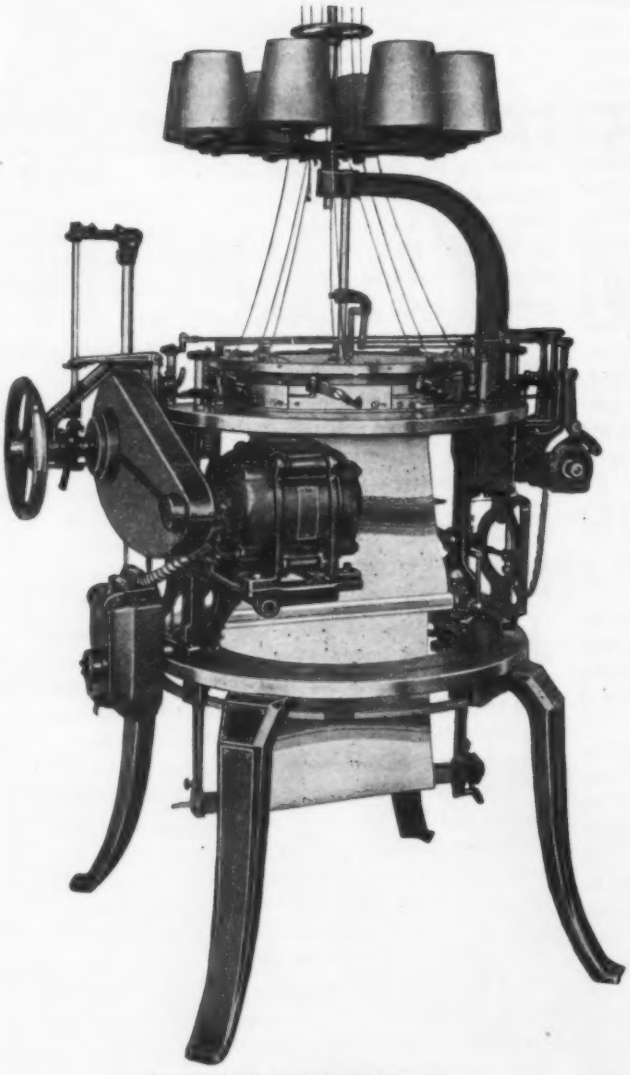
The buyer admitted he had bought nothing from the mill this year, and was reminded that so long as his house showed no disposition to continue past relations it had become necessary for the mill to look elsewhere for an outlet. It was the salesman's impression that the buyer eventually would look elsewhere for merchandise, for the mill does not expect to have more than will be sufficient to meet the requirements of jobbers who are taking its lines.

One large jobbing house west of Ohio is reported having pursued a policy of discouraging competitors who were considering coming into the market. It transpires that this establishment recently wrote off a stock shrinkage of something over $700,000 on which to claim a rebate from excess profits taxes. Preliminary to this the establishment was offering practically nothing to its retail customers, and was not eager that its competitors go out.

It is understood some of the jobbers have men on the road, which is construed as meaning they have stocks. Few, however, are assumed to be loaded to the extent of the establishment that was able to show a shrinkage of nearly three quarters of a million dollars on its entire stock, of which knitted good were only a small part, however.

There may be a retailer here and there who feels that he is not having a fair volume of business, and there may be a few others who imagine they are overstocked. What appears to some merchants as a heavy stock is probably no more than would be moved on two or three old-time Saturdays. In the main, retailers are selling in their usual quantity. "Where are their stocks coming from?" asks a well known executive. "If they have been selling from stock their supplies must be pretty nearly exhausted. Just imagine these merchants coming into the market at about the same time. Then think of the buying that must be done by the jobbers. Do you suppose there would be enough merchandise to go round? Not if mills have been operating on short time, as is commonly reported; not if they will keep stocks down to a minimum. I look for such a scram-

Wildman Motor Drive



Drive on Bathing Suit Machine
Back View.

Look this drive over, and then go out in your knitting room and form a mental picture of how it would look if all the machines were equipped with Individual Motors. Dangerous belts and unsightly line shafts done away with, bettering the light and adding to the convenience of the knitting department.

But the improved appearance of the knitting room is not the only advantage. The motor drive increases the production of the machines 10 to 15%, as the loss due to belt slippage is entirely done away with.

The drive can be attached to a Wildman Belt Driven Machine in a half hour's time, by simply taking out the old side and slipping in the new drive complete. No drilling or tapping is necessary.

WILDMAN MFG. CO.

ESTABLISHED 1889 NORRISTOWN, PA.

ble for goods that prices cannot but advance in response to the sudden and unusual demand."

An important factor who is less optimistic takes the view that if mills have stocks and add accumulations, and later increase production to meet the greater demand, it would be but a short time before there would be enough knit goods to supply all of this country and some to spare. Hence, he says, mill operations ought to be "curtailed until curtailment hurts."

It would appear that the loss of production already accounted for assures a fairly bare market long before snow flies again, but it ought not be overlooked that extreme caution is to be observed if business is to be put on an approximately stable basis.

Some distributing concerns are maintaining a strikingly defiant attitude in the belief, affected or otherwise, that they are in control of the situation. One establishment whose accounts are guaranteed by a banker had underwear on order for March delivery, and in a letter to the mill requested that shipment be deferred until April. The manufacturer fell for the scheme that the jobber had in mind, and refrained from delivering until the first week of April. About the time the merchandise was shipped out the banker canceled the order, stating that his guarantee did not extend beyond March. And there the matter rests for the present.

It is assumed the buyer and banker were in collusion for relieving each of his liability; that perhaps the buyer felt he could better afford to reward the banker for helping him to repudiate his order. The ways of a merchant who wants to dodge his responsibility for acceptance of his purchases are as devious as the tricks of the heathen Chinee, to use a simile of a departed writer.

But is the weak jobber who, after committing himself to a mill to be seriously blamed when some other mill, as weak perhaps as the jobber, comes along and virtually makes him a present of merchandise. That is precisely what has been happening and still is going on, in the face of the almost positive assurance that prices must be higher.

A case in point is that of an offer of low end cotton hosiery at a price so low that the buyer, watching with keen interest the various moves of a mill for getting rid of a large accumulation of distress goods, anticipates an offer of a still more attractive figure. It is a foregone conclusion that he will get the goods, and that they will cost him so little as to virtually guarantee him a handsome profit.

Several buyers who have picked up rare bargains of late have no idea of unloading until the market stiffens. In other words, they will get the profits that would have gone to mills had the latter been possessed of the patience or means for holding on. It is the belief that the knit goods which have been available at sacrificial prices must be pretty well cleared off the market. It develops, however, that there is considerable cheap hosiery in the gray waiting for buyers, some of it to be looped or sewed, to suit the buyer.

Some of the cool, calculating mill executives who have seen the profits of less thoughtful managers vanish with their eagerness, in the last few months, to get business at any price a buyer might offer, are directing attention to what ought to be commonly understood, that heavy taxation must be counted on for years and must be figured specifically into costs and the proper sums set aside against the day when the tax becomes a lien.

As is held, taxes will have to be paid, if the assets can be found, and when cash is not available the government will be expected to secure itself through the filing of liens, which means that payment cannot be evaded. Sentiment on the subject was crystallized in a recent conference of a group of knitting manufacturers, at which it was agreed that their profits henceforth must be sufficient to enable them to set aside each year a sum assumed to approximate the amount of accruing taxes, and that to operate on any other basis would be to invite financial disaster.

No one looks for the profits which were encouraged by government officials during the war, when large revenue immediately available was required. Nor is it expected, for the present or during the period of excess taxes, to return to the basis of pre-war profits.

For the first quarter of 1919 mill operation was so curtailed and product sacrificed in the market that profits out of which to allow for future disbursements have been practically wiped out. During the remainder of the year, if buying shall be in volume sufficient for taking care of distributors' requirements, there ought to be opportunity for operating on a scale more nearly commensurate with the demands that are certain to be made eventually on industry. The day is past when a manufacturer ought to feel satisfied with simply a return of his investment in production.

Another weeding out of juvenile labor in knitting mills already is in progress for compliance with the Revenue Act of February 24, 1919, in order to escape an additional tax. Section 1200 of the Act provides:

> That every person operating a manufacturing establishment in the United States in which children under the age of fourteen years have been employed or, permitted to be employed, or children between the ages of fourteen and sixteen have been employed or permitted to work more than eight hours in any day or more than six days in any week, or after the hour of seven o'clock post meridian or before the hour of six o'clock ante meridian, during any portion of the taxable year shall pay for each taxable year, in addition to all other taxes imposed by law, an excise tax equivalent to 10 per centum of the entire net profits received or accrued for such year from the sale or disposition of the product of such manufacturing establishment.

In Section 1207 it is provided that "The first taxable year for the purposes of this title shall be the period between sixty days after the passage of this Act and December 31, 1919, both inclusive, or such portion of such period as is included within the fiscal year (as defined in Section 200) of the taxpayer."

Section 200 prescribes that "The term 'taxable year' means the calendar year, or the fiscal year ending during such calendar year, upon the basis of which the net income is computed under Section 212 or Section 232."

Turning to Section 212 it is found that if a taxpayer changes his fiscal year to calendar year, or his calendar year to fiscal year, or from one fiscal year to another, the net income shall, with the approval of the commissioner, be computed on the basis of the new accounting period, subject to the provisions of Section 226."

Section 226 prescribes the basis for computing net income if a taxpayer changes from fiscal year to calendar year, from calendar year to fiscal year, or from one fiscal year to another.

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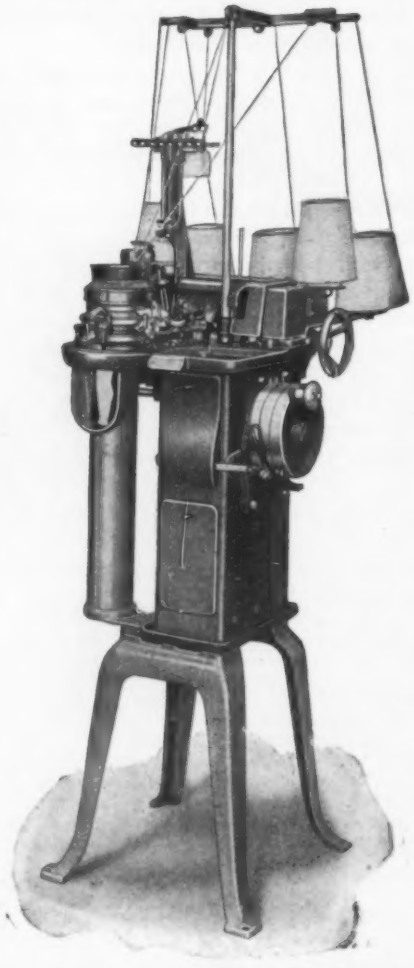

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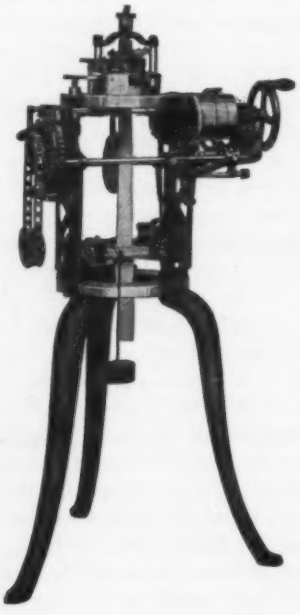

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Loop Wheel Knitting

BY WILLIAM DAVIS, M. A.

Many manufacturers of knitted goods know little regarding the merits of loop wheel knitting, the usual reason for this being that the latch needle machine is apparently so much simpler in construction and has decided points of advantage in regard to speed of production. Compared with latch needle machines it may be admitted that knitting on the loop or bur wheel knitting machine demands more skill in adjustment, but this is ample compensated for by the high quality of the fabric produced.

In knitting with the ordinary latch needle, as we usually understand it, the fabric is not given such a decidedly regular appearance as is the case with the spring or bearded needle as used in loop-wheel knitting, and the reason is not far to seek. In the latch needle machine the needles are all more or less independent in action in relation to each other, each needle forms its own stitch and in so doing has to go through a set of motions independent of its neighbor. In one machine we have several hundreds of needles and so there are several hundreds of chances of the stitches being faulty in exact conformity with their neighbors.

Speaking with a prominent manufacturer some time ago, the writer was informed that he was more fully in favor of work made on the bearded or spring needle on account of the better control exercised over the stitch formation by the various stitch making parts. In addition he stated that he knew at once the difference between the two varieties of work by a subtle superiority not apparent to the uninitiated or the unexperienced but which nevertheless was at once evident to a conoisseur of knitted textures. The spring needle production is remarkable for its consistency, regularity and for that property termed "skin," which may be explained as the quality which a fabric possesses of obscuring the raw outlines of its loops and knitting them into one homogeneous mass where the individual loops lose their identity in the compact whole. These machines are built extensively in America and Britain and in both countries enjoy a large popularity on account of their manifest advantages over machines of other build. They differ in some salient features but the general principles of loop formation and adjustment remain more or less the same in all machines of this particular type

Figure 1 is a full view of a mechanism employed in large numbers in the knitting industry and from an examination of this illustration an idea may be gathered regarding their general appearance and construction. This shows a machine stand fitted to accommodate two loop wheel knitting machines of which the machine on the right is empty so that the reader may have a more distinct view of the internal parts, whilst the machine on the left is shown with the fabric upon it in the act of being made. This type of machine is unique in the respect that the finished fabric is drawn off the machine upwards or sky-wards, which point makes it readily distinguishable from all other types of knitting mechanism. In this way the various parts of the machine are easily accessible for adjustment and the fabric can be kept under full view of the worker at all times. This is rendered perfectly easy by the fact that the machine revolves with the fabric and the material produced is under the constant view of the operator that he may at once become cognizant of faults which develop in the working of the web.

In this system of machine construction we have two machines on one stand and these are driven from one pulley shown at the left hand side of the machine. This is connected to a shaft which is provided with bevel gearing at the points A and B, this working into a teethed ring underneath each machine and causing it to rotate. Each frame is built to accommodate 3 feeds, and three courses

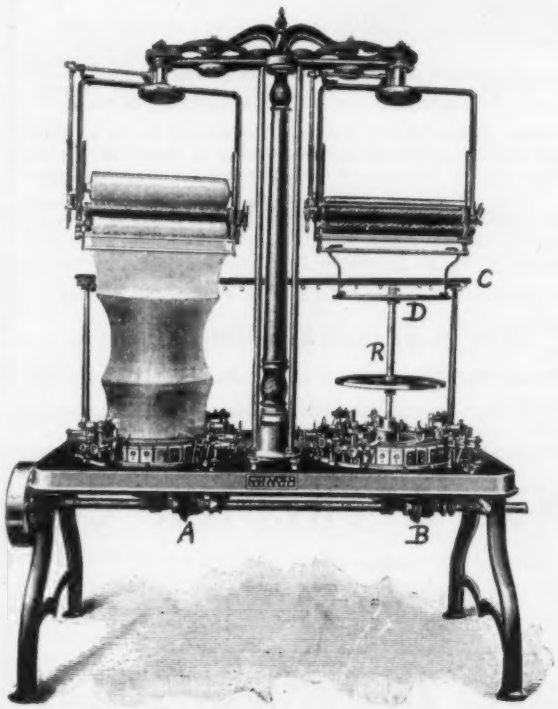

FIG. 1. A TYPE OF LOOP WHEEL MACHINE.

of loops can be worked at one revolution of the shaft and the yarn is placed at the back of the machines, passing through the eyes of the stand C on the way to be fed into the blades of the loop wheel. Seeing that the fabric and the needles revolve, the thread and their bobbins are stationary as well as the stitch forming parts of the machine.

In this type of build both machines are supported from a central column which is strongly constructed so as to obviate pillars of support at each side of the two machines which would render them much more inaccessible although it is a method followed in the older types of this kind of mechanism. The circular rotating motion is communicated to the higher part of the frame by means of the central bar shaft, which, through the circular part marked D is connected to the apparatus for winding up the fabric. The efficiency of the wind-up of the finished cloth is one of the strong features. In the institute with which the

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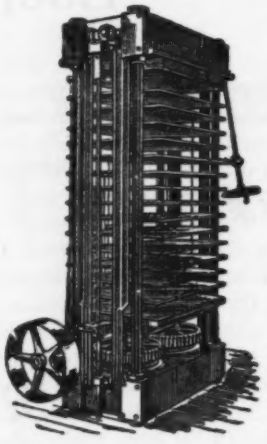

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writer is connected the loop wheel frame is of an older construction as used for the making of fine gauge French necks to be subsequently attached to knitted garments. In this type we have all the salient features of the present-day machine in regard to stitch formation, drive, etc., but in the take-away of the fabric we have a long cord running through a metal eye in the roof, one end is fastened to the fabric by hooks forming a kind of swivel which revolves with the fabric and suspended at the other end of the cord we have a set of weights which can be added or subtracted according to the pull which it is desired to exert on the fabric. Of course the length made is limited to that which reaches the roof when it has to be cut off and the swivel hooks attached afresh. All goes merrily until there is a press-off from the needles of the machine when the weights exert their full drag and the fabric disappears upwards and the weights fall with an ominous bang on the floor. As these necks were made in short pieces it was not such a serious matter to take them from the machines in small lots but for the making of continuous web, such a crude method of taking up the fabric was intolerable.

The wind-up of the cloth is not so simple as it seems for we have a rather complicated mathematical problem involved in the speed of the take-up of the fabric as the roll of fabric increased in size. A tooth of the take-up wheel has a different effect on the wind-up when the fabric roller is empty than when it is full and intermediate effects differentiated by the increasing size of the roll. Some of the wind-up motions attached to circular frames of the present day require great improvement in their method of working, for it is no uncommon thing to see the frame brought to a standstill owing to an accumulation of unrolled fabric which the operator takes up in primitive fashion by giving the roller a periodical extra turn by hand. When the overseer notices such details it is time he called in the mechanic for an explanation and a request to give it instant attention.

The quality of the fabric depends to a great extent on the efficiency with which the wind-up roller operates and if you see the slack fabric dragging round the needle ends serious trouble is not far away. The needles are cast in leads and stand arranged side by side in the circle of the machine with their springs or beards facing the worker and this causes the stitch-forming devices such as the presser and loop burs to be placed on the outside where adjustment can be quickly and efficiently conducted. The fact that the needles stand together vertically shoulder to shoulder gives them a great advantage over machines where the needles are arranged radiating from the centre as in the case of the French circular frame. In the latter style the needles as they approach the outer extremity are going farther apart by the very nature of their arrangement and when it comes to fabrics of extreme fineness, mechanical difficulties begin to appear. When the needles are placed together side by side in a vertical direction they can be arranged with extreme closeness of gauge and this type is splendidly suited for the finest textures made in the knitted stitch.

On these machines a large variety of circular webbing can be produced as for example fabric for night dresses, jersey or sweater cloths, fleecy fabric for underwear and intermediate garments, heavy weight underwear and imitation Astrachan cloths. The machines are constructed in a variety of sizes the smallest being 12 inches diameter for necking fabrics increasing by an inch until the largest size is about 32 inches diameter. With the increase of diameter there is of course a corresponding increase in the number of feeds and consequently in the rate of production. The system of gauging is similar to that adopted for Cotton's Patent frames and is mentioned as being the needles per inch and a half, thus a 32 gauge has 32 needles per 1½ inch, a 40 gauge has this number of needles per 1½, the measurement being taken at the needle heads where the needle stitch is discharged.

The speed depends on the diameter of the frame, the larger diameters require to be run at a slower rate than the narrow machines. A machine with a 20-inch cylinder and with a sett of needles 16 per inch may be run at a speed of 55 revolutions per minute and if the machine be fitted say with 4-feeds, this would give a total of four times 55 = 220 courses per minute and in a fabric with 22 courses per inch this would give 10 inches of fabric per minute, or a yard in a little over three minutes working.

One of the outstanding advantages is the facility with which the gauge may be altered on the same machine, an achievement which is not feasible on many kinds of knitting mechanism owing to the fact that the needle leads of the machines are cut at the start with grooves according to the gauge which cannot be altered without inserting new cylinders, and thus for such machines the manufacturer is compelled to install a series of different gauges to suit the trade for winter and summer goods. The gauge is determined by the size of the needle and its spacing in the lead is a matter which is ultimately fixed by the size of the needle mould. The needles are placed side by side in the machine and securely fastened by plates each one of which controls a number of needles, these being securely fixed in absolute trueness of position and carefully pillared preparatory to work. A frequent change of gauge is highly undesirable and the best results are secured when the machine is set and adjusted to produce one texture and retained on this class as long as possible.

In many cases, however, a firm has not the necessary equipment of machines to give the light and heavy weight fabrics necessary for their trade and they may find it necessary to change the gauge of their machines several times a year. In this case we require to secure a new series of stitch-forming wheels or burs to the sett of the gauge and a lot of needles require to be cast and added to the needle cylinder replacing those of the former gauge. This, however, is not an occupation to be indulged in as a pastime and if the machine is working well on the required fabric everything possible should be done to avoid changing the adjustment of the machine to a different gauge. The take-up motion of the machine is adjustable to various finenesses of fabric and the fabric roll usually holds about 50 pounds of material for a diameter of about 20 inches before its being necessary to empty it and start afresh. Should the thread break the machine is fitted with a clever device for stopping the frame before it can press off the work whilst there is also a motion for stopping the frame when holes are made at the needle ends.

The parts essential for the operation of loop formation on this machine are shown diagrammatically in Figure 2, which represents the various wheels composing a "feed"

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on the machine, this being duplicated all round the cylinder according to the number of feeds with which it is equipped. The view is that of the parts seen from above when the needles are indicated by dots arranged in the circle and marked N. These are made to revolve in entirety when the machine is set in work owing to the bevel gearing which is fitted into the bottom of the cylinder. This means that the fabric revolves with the needles and that the various burs and wheels used in stitch formation are stationary. The blades of the burr wheels used in making

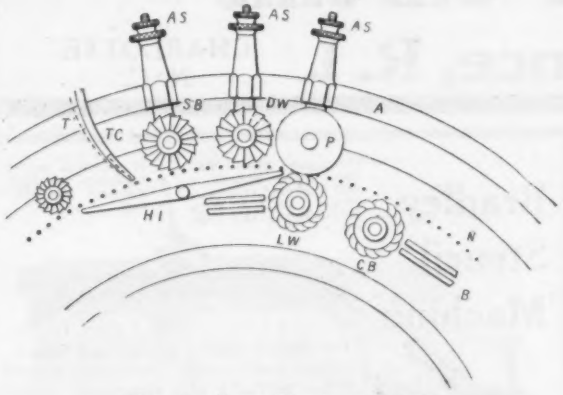

FIG. 2. LOOP FORMING PARTS.

the stitch are geared into the needles and when the latter are set in motion they cause the burr wheels to revolve on their own axes. These burr wheels consist of circular discs into which are fitted burr blades bent to an angle and of a sett which corresponds to the gauge of the frame. The various portions may be recognized from Figure 2 where the thread is given by the letter T as it passes through the eye of the thread guide T C from whence it goes to the stems of the needles to be sunk into loops. At this point the stitches of the former course are down on the needle stems and the new yarn is placed above them by the thread guide. The sinker burr or loop wheel is represented by S B and the blades of this wheel gear into the needles so that when the thread comes round to this point it is pushed between the needles in a horizontal direction and thus the loops are sunk over the stems.

The blades of the sinker burr have, however, a further function to perform than pushing the yarn between the needles and for this are provided with a projecting piece which catches the yarn and after sinking it over the needle stems draws it up beneath the springs or beards of the needles. In British built frames the action of the sinker burr is supplemented by the dividing wheel shown at D W which is again provided with blades in its circumference so that they engage the yarn again and operate on the sunk loops to insure that they are thoroughly evenly sunk between the needles. British builders find that this wheel is most useful in leveling the stitches and making them absolutely uniform, a precaution which greatly contributes to protection of texture and stitch.

The equalized loops next pass in sequence to the position occupied by the presser wheel P which is a plain disc adjusted near the needle springs in such a way as to cause them to be suitably pressed into their grooves, the newly sunk loop or yarn being held securely under the springs. Just at the instant that the springs are being pressed the landing wheel L W, arranged nearly opposite the presser disc, pushes the fabric stitches farther up the needle stems so that the old loops are landed onto the beards of the needles, and when completed the needle springs are freed from the action of the presser. The stitches in this position then reach the cast-off burr C B which is arranged higher up in relation to the needles so that it will draw the fabric off the needle ends and complete the formation of the new row of loops. The fabric then passes under a cloth wheel or in the case of British frames the holding down iron H I which is so adjusted that the fabric goes under it and is thus placed in its lower position on the stems of the needles.

To make certain that the work of the cloth wheel or the holding down iron is perfectly performed another wheel is placed in the ring named the clearing wheel whose function it is to deal with any refractory stitch and push it into its proper position down on the needle stems which is essential for the next course of loops.

All these parts are adjustable by means of the thread screws A S attached to the brackets on which they are fixed and the correct adjustment of the various wheels and burs is of prime importance to effective knitting. From the diagram of Figure 2 it will be noted that the stitch-forming parts divide themselves into two distinct classes, (a) those which are attached to the outer ring A and (b) those attached to the inner ring of the machine B. Of these the thread guide T C, sinker burr S B, dividing wheel D W and presser wheel P are attached to the outer ring whilst the landing wheel and the cast-off burr are attached to the inner ring; the holding down iron H I is attached to the outer ring.

Of these parts all are visible during the making of the fabric except the two wheels fixed on the inner ring and which are under the fabric pushing it up and therefore not seen from above when the fabric is in work. The thread guide is usually attached to the same bracket as the sinker burr and this adjustment has to be made so that the yarn passes exactly to its correct position on the needle stems. This is usually a matter of small difficulty but defects are apt to occur through uneven tension being on the thread and this is accentuated if the bobbin is too near the thread guide because the yarn has not sufficient time to recover from the minute shocks it always undergoes in unwinding itself from the bobbin.

Any jerkiness can be neutralized by having a sufficient length of thread between the bobbin and the delivery of the yarn as by this means the thread is able to readjust its tension before passing into the needles for loop formation. For this reason in modern machines it is sought to have the yarn passing through several eyes or bars on its way to the needles so that the position of the thread may be stabilized and that the minor variations of tension may be evened out before reaching the needles. Also on account of the stop motion we require a length of free thread which will have time to operate before the fabric is pressed off the needles of the machine.

The thread should not be fed in too close to the sinker burr or a knot will be unable to get through between them and breakage will result. The sinker burr is adjusted farther in or farther out according to the length of the loop desired, but there is also an adjustment in a vertical direction which insures that the loop is placed in the correct position on the needle stem. The best place is that the loops are not chocked near the springs of the needles.

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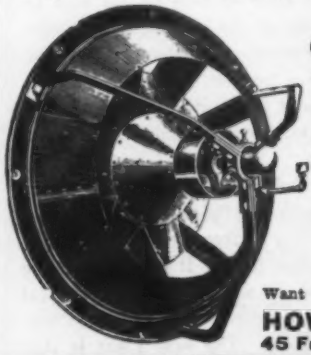

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If the bur is adjusted too low, the loops are not drawn properly under the springs and holes will be made in the fabric. The blades of the dividing wheel are arranged parallel to the needles in a vertical direction and should be adjusted so that the blades fall exactly between the needles and to the correct position on the yarn.

One of the most difficult adjustments is the presser and with it the landing wheel for they are ultimately connected in their motion. The presser can be adjusted farther up the needle spring or lower down as required and this adjustment has an important influence on the life of the needles. If the presser is too high, then the presser operates on the upper part of the needle spring and causes it to give out sooner than would be the case if the pressure occurred farther down. In a short time the needle springs would be found to have lost a considerable amount of their elasticity and would fail to return to their normal open position after the presser had ceased to act. Also the presser has to be adjusted so that it gives the correct degree of pressure in a horizontal direction against the

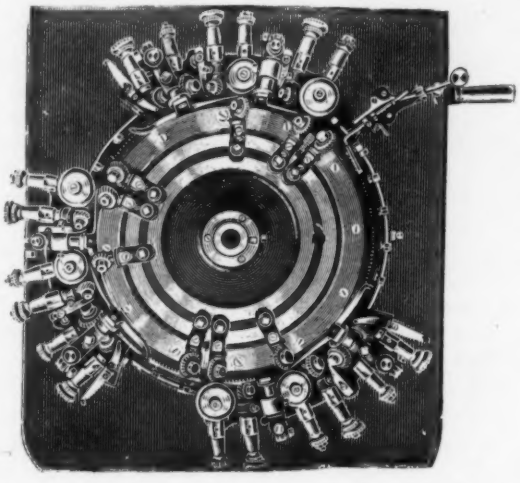


FIG. 3. TOP VIEW OF FRAME FOR MAKING FLEECY WEBBING.

spring of the needles, if the wheel is adjusted too far into the needle springs the pressure will be excessive and the needles will be pushed inwards out of their true position whilst the needle springs will soon lose their elasticity and necessitate numerous replacements, thus the life of the needles is considerably reduced.

If the presser is placed too low it strikes the landing wheel with which it is essential that it should co-operate in loop formation. The blades of the landing wheel should be so placed as to lift the old stitches onto the springs during pressing, if the landing wheel is timed to act a minute fraction too soon they pass the loops under the springs before they are properly pressed and the result is tucked stitches. If the landing takes places when the springs are only partially closed, split yarn or half stitches are caused in the fabric. A similar defect occurs when the landing is timed too slow for then the presser is releasing its push on the springs and landing at this instant has the effect of pushing the loops under the springs instead of over them. The springs of the needles require to be carefully pliared into strict alignment at frequent intervals or the blades of the wheels get damaged by contact with the springs and defective work is a result. The cast-off burr pushes the loops completely over the needle ends and its adjustment is not such a delicate matter.

If it is found that the fabric is with difficulty discharging its loops, the cast-off burr is raised in position and the stitches are more perfectly drawn through. In American machines we have in place of the holding down iron, the cloth wheel and its object is the same, namely, to hold down the fabric on the stems of the needles and allow the new yarn to form its loops farther up.

Figure 3 is a view of a machine of this type specially adapted for making thick fleecy knitted webbing where in addition to the ordinary burr wheels for making plain stitch, may be distinguished extra pressers, etc., for the production of double fleecy backing. The frame is seen to have 3 feeds, which will give 3 courses of loops at every revolution of the frame. The exact appearance of the inner ring and its attachments may be clearly distinguished, and the various adjustment screws on the outer ring are also prominent. When fabric is on the machine the wheels attached to the inner ring are not visible as they are placed under the fabric to knock over the loops.

Among the Knitting Mills.

It is reported that the Interwoven Hosiery Company, of Martinsburg, will move its plant to Fairmont, W. Va. The Chamber of Commerce has agreed to donate the land. The cause of the removal of the business is given as the scarcity of girls in Martinsburg to work in the mills. It is said that at present only 50 girls can be secured to work and 200 are needed. The plant was to have been moved a year ago, but the war held it up.

The New Granville Hosiery Mills Co., Creedmoor, N. C., incorporated with a capital stock of $50,000 (of which about $15,000 will be paid in at the time of starting operations) has secured a lease on a plant and will start improvements immediately, with the expectation of being ready to operate by the first of June. The company has purchased the Regina Hosiery Manufacturing Co., of Haw River, N. C., and will remove the machinery, etc., to Creedmoor. Eighty latch needle knitting machines, 4 sewing machines, 10 ribbers and 15 loopers were installed at the Regina plant at last report. Men's and women's 176 and 184 needle hosiery will be manufactured, and the company expects to sell its product direct. There is to be no dye house, the company advises. Electric power will be used. The following are the officers of the new concern: G. H. Dove, president; N. J. Boddie, treasurer, secretary and manager.

Durham (N. C.) Hosiery Mill No. 1 is erecting a new dyehouse. The building is to be a three-story brick structure and equipped with the latest dyeing apparatus.

The Glenn-McLean Knitting Mills, Gastonia, N. C., have been incorporated with a capital stock of $50,000, of which one-third has been paid in. The incorporators are Robert C. McLean, George L. Glenn and Harry Rutter, all of Gastonia.

The Edenton Hosiery Mills, Edenton, N. C., have been incorporated with an authorized capital stock of $125,000 and $30,000 paid in. The incorporators are C. D. Webb and 53 others, Mr. Webb being the largest stockholder.

A company is being organized at Chatsworth, Ga., with

capital stock of $50,000 to establish hosiery mill and electric light and power plants. Roy McGinty, J. G. Neely, T. W. Brooks and others are interested.

Brooks & Anderson, Philadelphia, Pa., have recently inaugurated operations in a new mill at Coral and Williams streets, for the manufacture of women's hosiery. James Brooks and R. J. Anderson head the company.

The Paul Guenther Knitting Company, Passaic, N. J., has been incorporated with a capital of $200,000 to engage in the manufacture of hosiery, underwear, etc. John W. Stone, H. A. Black, and John R. Turner are the incorporators.

The Metric Hosiery Mills, Inc., Reading, Pa., recently organized, is planning for the operation of a plant at Eleventh and Marion streets for the production of men's and women's hosiery. M. M. Kalback is president and manager of the company.

The Moss Knitting Mills, Inc., Hamburg, N. Y., has been incorporated with a capital of $25,000 to operate a plant for the manufacture of knit goods. T., and E., and William Moss are the incorporators.

The Chapman Knitting Mills, 68 East One Hundredth and Thirty-first street, New York, have recently completed arrangements for the erection of a new two-story addition to its plant at 788 McLean avenue, Yonkers, N. Y., about 50 x 52 feet. It is also proposed to make alterations and improvements in the existing works at this location. Contract for the entire work has been awarded to the Riger Construction Company, Inc., 507 Fifth avenue, New York, at a price of about $20,000.

The Black Knitting Mills, New York, has been incorporated with a capital of $25,000 to operate a local plant for the manufacture of knit goods. Alton Black, Clyde L. Black, and Samuel W. Schwartz are the incorporators.

The Dillsburg Manufacturing Company, Dillsburg, Pa., has recently completed the installation of fourteen new knitting machines in its plant to provide for increased capacity. The company manufactures men's women's and children's hosiery.

The Albany Knitting Company, Albany, N. Y., has recently filed notice with the Secretary of State of an increase in its capitalization from $15,000 to $30,000, to provide for general business expansion.

The Arr-Tee Knitting Mills, Inc., Philadelphia, Pa., has filed articles of incorporation with a capital of $25,000 to operate a plant for the manufacture of knit goods. Jacob Grass, A. Titleman, and Morris Rirkin are the incorporators.

The Lorraine Hosiery Company, Inc., New York, has been incorporated with a capital of $50,000 to operate a plant for the manufacture of hosiery, etc. William Stamson, E. C. Davidson, and G. Cammez are the incorporators.

The Electric Knitting Company, Cohoes, N. Y., operating in the building on Ontario street formerly occupied by the Victor Knitting Mills, is now engaging at capacity on a 50-hour per week schedule, divided into five working days of 10 hours per day. It is understood that the company has a large number of orders on hand which will keep its mills busy for some months to come. The company specializes in the production of knitted wash cloths and other knitted specialties.

Thomas Roe, formerly engaging as superintendent of the McCallum Hosiery Company, Florence, Mass., and associates, are understood to be organizing a new company to operate a local plant for the manufacture of hosiery.

Worley & Thrush, Shippensburg, Pa., have recently completed plans for the inauguration of operations in a new local knitting mill for the production of knit goods.

Swatow Pineapple Cloth.

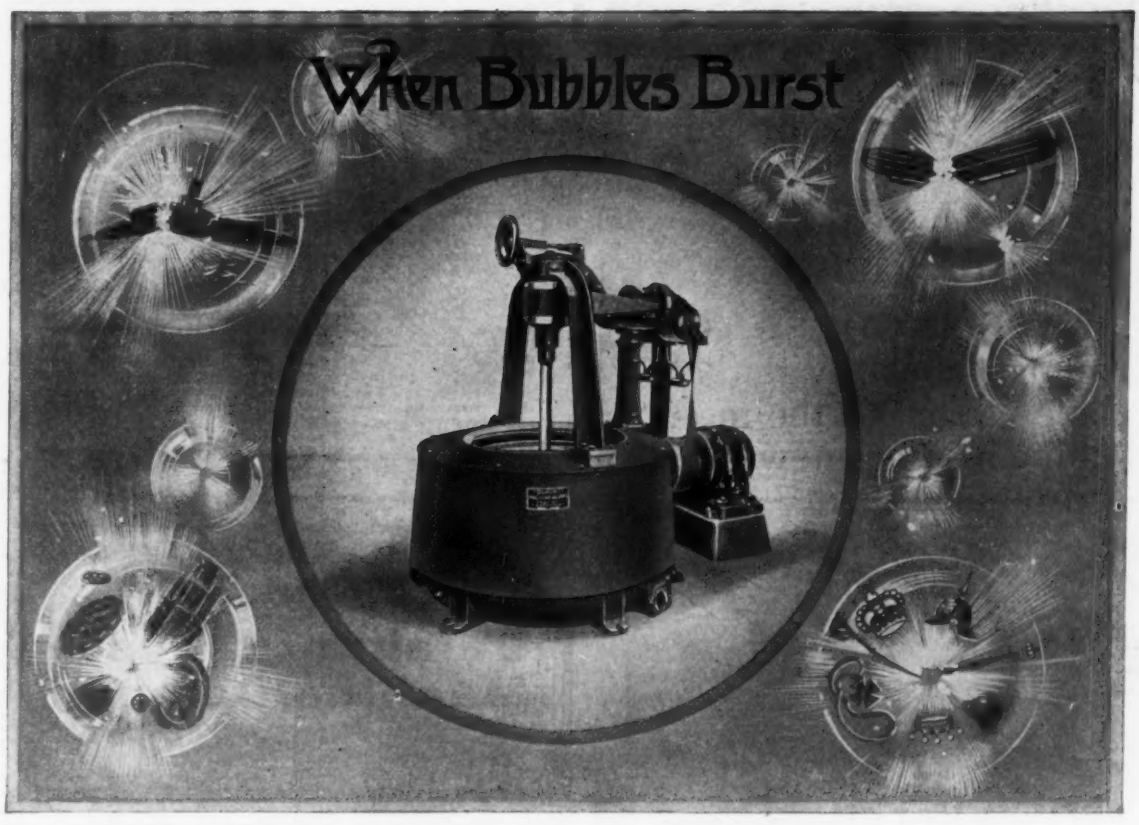
Although manufacture of cloth from pineapple fibre is a minor industry of the Swatow district of China, a brief description of it may be of interest. In Fengshun district there are pineapple plantations specially cultivated for the fibre. Kityang district also produces fibre, the annual estimated production of both districts being valued at $30,000 (U. S. $24,000). The figures of the Maritime Customs show a considerable import from native ports—principally Hainan Island, so dealers say. In 1913 this import was 549,867 pounds, in 1914 457,200 pounds, and in 1917 240,933 pounds. The trade also claims that a small supply of fibre, inferior grade, comes from Formosa, its average annual value being about $30,000 (U. S. $24,000). The present price of imported fibre is $70 (U. S. $56) per picul (133⅓ pounds), while the 1913 price was about $50 per picul and the 1917 price $60.

The extraction of the fibre from the leaf is a simple process. The green leaf is first soaked in a solution of lime water, then taken out and scraped with a piece of broken chinaware or glass, the scraping motion being away from the operator and toward the pointed end of the leaf. The fibres are then pulled out by using the thumb nail and forefinger, and, after being soaked in water and washed, are sun bleached. One hundredweight of leaves will give about a pound of fibre. One workman with one or two minor assistants can prepare 1⅓ pounds of fibre per day. The wage of an average workman is 40 cents (U. S. $0.32) per day.

For weaving into cloth the fibre must be made into thread, which process is the following: The worker, invariably a woman, selects sufficient fibre for one day's work and soaks it in fresh water for about half an hour. The fibre is split into threads of the desired size at the thick end and pulled apart. Two threads are then joined by doubling the small end over the thick end of another thread and rolling on the knee. The only twisting is where the threads are joined. This process is repeated until the desired length is obtained, the thread being run into a basket and later sundried. The loose thread is then wound into a ball. When run onto bobbins and spools it is ready for weaving. Jute and ramie threads are made in the same way.

The native loom is used entirely in weaving this cloth. The ordinary width of the cloth is between 15 and 16 inches and the maximum width between 18 and 20 inches, which is called "special" width. The length of the cloth varies between 80 and 100 feet. Various grades are made. The present wholesale price ranges between 15 cents (U. S. $0.12) per yard for the coarse and 24 cents (U. S. $0.192) per yard for the fine. Sometimes to add to the appearance of the cloth ramie thread is used for the woof. This cloth is widely used for summer clothing.

"One concern employing approximately 40,000 people has not discharged a single person because of his physical condition for several years. What is possible for this concern is possible for you, Mr. Employer.



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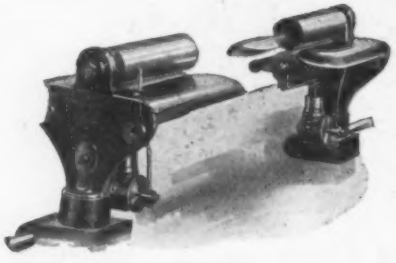
YOU can own "steel hands--" you can only hire human labor. With the labor shortage, the machine assumes new importance. The



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replaces "human hands" with "fingers of steel" that guide accurately and surely, fabrics to machines or rolls. And they're "always on the job" and work without wages.

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DELAHUNTY Dyeing Machiner

THE first revolving cylinder dyeing machine made and operated in this country was manufactured by the Delahunty Dyeing Machine Company. Since the year 1880 we have given to the textile industry many superior machines for dyeing, bleaching and oxidizing raw stock cotton, waste stock, linters and articles of knitted construction.

In our circulating machines, sulphur and cold vat colors are dyed with perfect success. The Brandwood System of dyeing warp on beams, as used in the works of the Elton Cop Dyeing Co., of Bury, England, has been delegated solely to this establishment for the manufacture and sale in the United States. This machine will dye at one operation one to twelve beams of indigo, hydron, indanthrene and other oxidation colors, besides possessing other valuable features which aid production and lower the cost of dyeing.

The machines of our manufacture of greatest import to the textile industry are:

Revolving Cylinder Raw Stock Dyeing Machinery.

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Hosiery, Oxidizing and Tom Tom Machines.

Special machines are made for aniline, sulphur, indigo and other vat colors.

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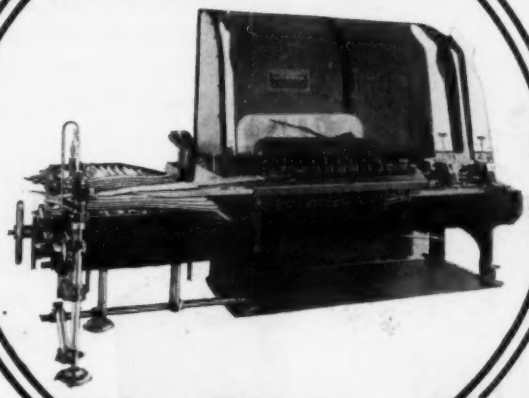
DO YOU DRY HOSIERY?

On the Proctor Automatic Boarding, Drying and Stripping Machine for Hosiery, one man can board as many stockings as two men are able to board in the old way. The



operator just puts the stockings on and the Proctor Automatic does the rest. It dries the stockings, then automatically strips them from the forms and counts them into piles of twelve.

The Proctor Way Reduces Labor Costs

FIGURE IT OUT FOR YOURSELF

If you are using
STEAM BOARDS

⟨ Number of dozens one man can dry on a steam board ⟩ × 1.6 = ⟨ Number of dozens the same man can dry with a Proctor Automatic ⟩

If you are using
DRY BOXES

⟨ Number of dozens one man can handle in dry boxes ⟩ × 2 = ⟨ Number of dozens the same man can dry with a Proctor Automatic ⟩

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Proctor DRYERS For Hosiery

A Proctor Automatic in your plant will soon pay for itself. It is the fastest and most efficient hosiery dryer. No wear or tear. No seconds or pig-ears. Operator need not be experienced. The Proctor Automatic insures sanitary conditions.

Also, there is a Proctor Dryer for every textile drying need. Name the material you want to dry and let the Proctor Organization serve you.

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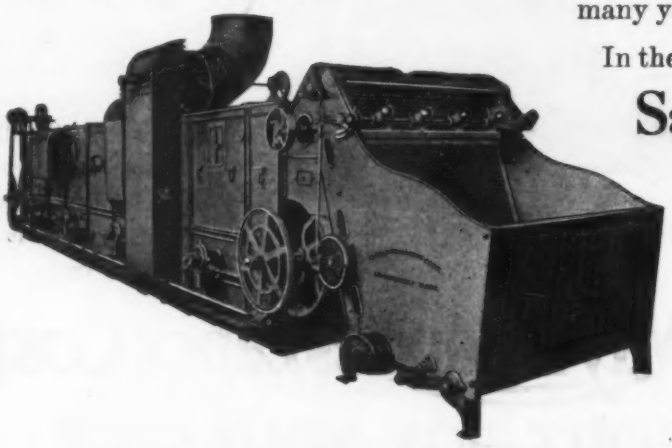
SARGENT DRYERS mark progress in Dryer Development comparable to that made in other fields of mechanical endeavor.

They are favored with a natural preference because they are designed on basic principles of air circulation, conveying, and general drying apparatus construction, which have had the approval of discriminating mill men and drying engineers for many years.



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For drying cotton, linters, wool, hair, flax and other classes of raw material.

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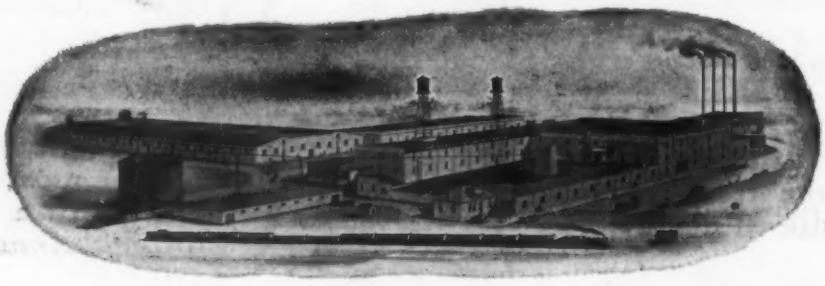

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It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

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Southern Agent: MR. JAMES H. MAXWELL, Greenville, S. C.

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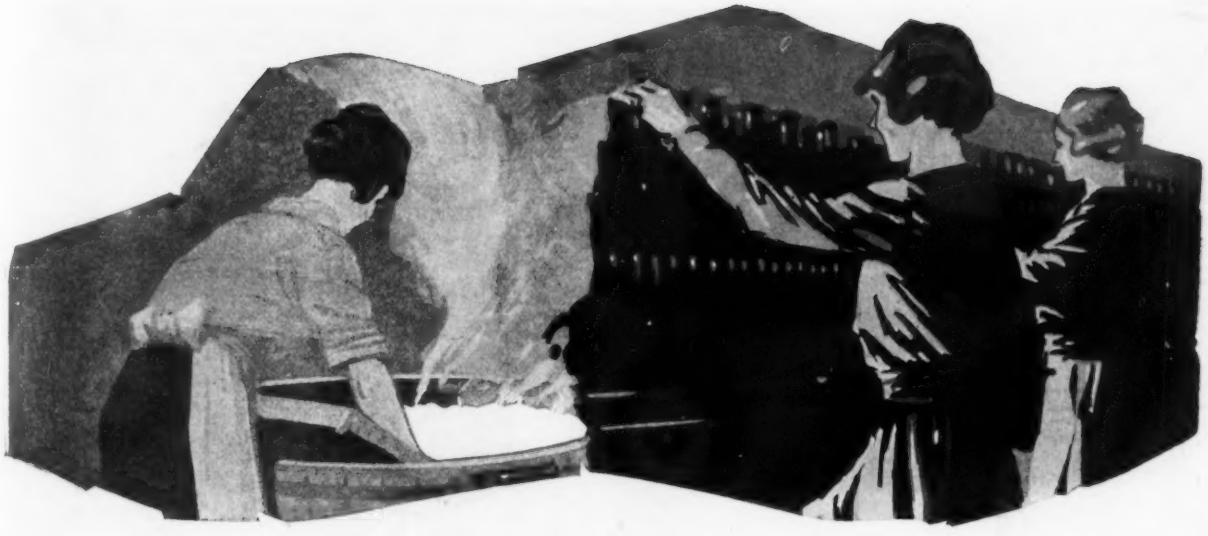

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Where is their time more valuable?

Over the wash tub doing the family's weekly washing—
Or—at the loom while the mill does the laundry work?
This is the question most mill owners are asking themselves today.

Production charts have shown that on the days when the family washing is due, output takes a decided drop, due to the women workers staying home. This is particularly marked where whole families are employed.

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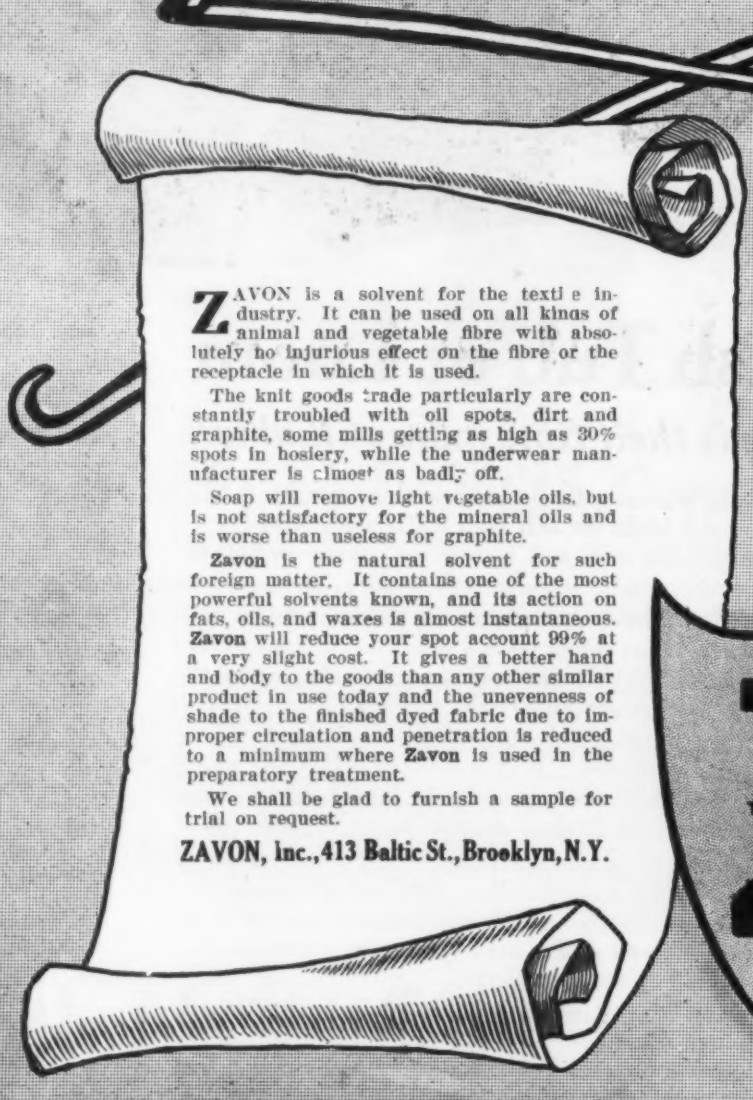

ZAVON is a solvent for the textile industry. It can be used on all kinds of animal and vegetable fibre with absolutely no injurious effect on the fibre or the receptacle in which it is used.

The knit goods trade particularly are constantly troubled with oil spots, dirt and graphite, some mills getting as high as 30% spots in hosiery, while the underwear manufacturer is almost as badly off.

Soap will remove light vegetable oils, but is not satisfactory for the mineral oils and is worse than useless for graphite.

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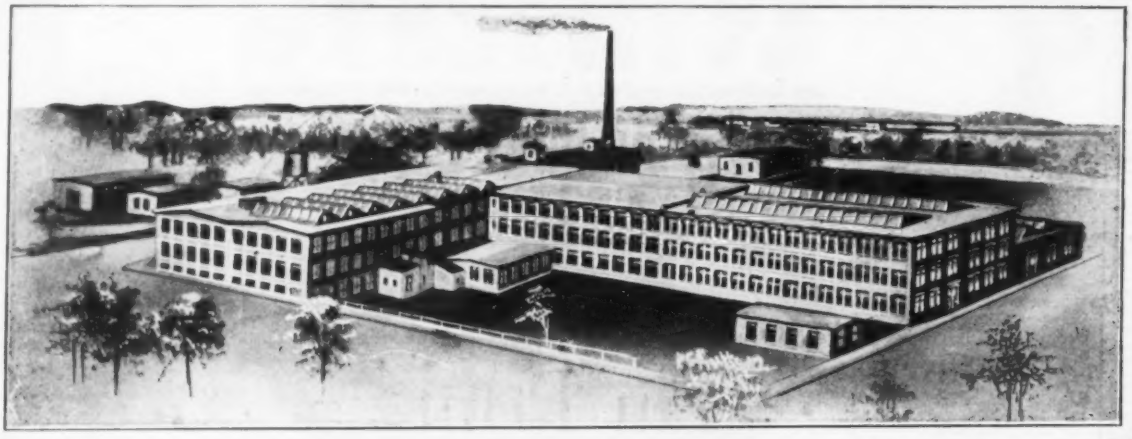

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Opens up fibre so that less chlorine does the Bleaching
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A dry powder—keeps indefinitely—easy to use.

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Primarily and logically, the American coal-tar color industry is a servant of the great American textile manufacturers, whose annual product runs into the hundreds of millions. It is the needs of the great army of textile consumers that we serve. It is the voice of the textile manufacturer to whom we listen. It is because the great American investment in textile manufacture must be insured against loss for all time, that an American dyestuff industry has been born to serve the Government with explosives for war, and with colors for textiles and allied industries in both peace and war.

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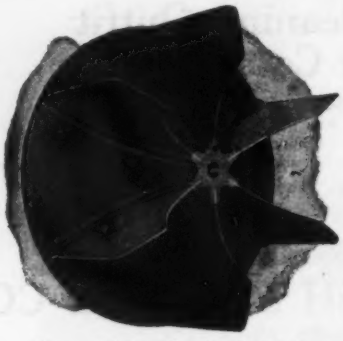

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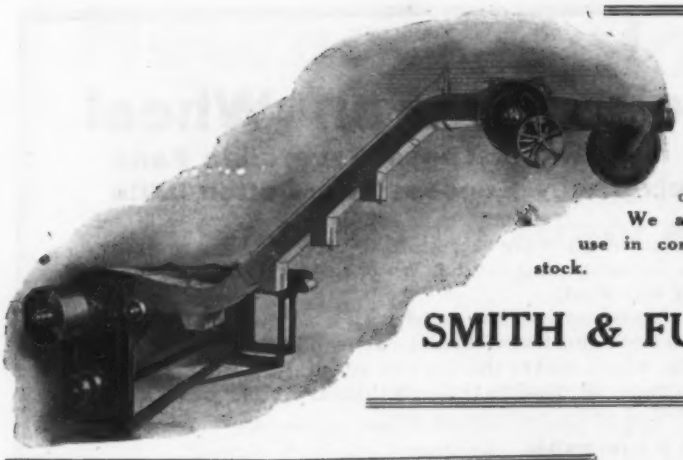

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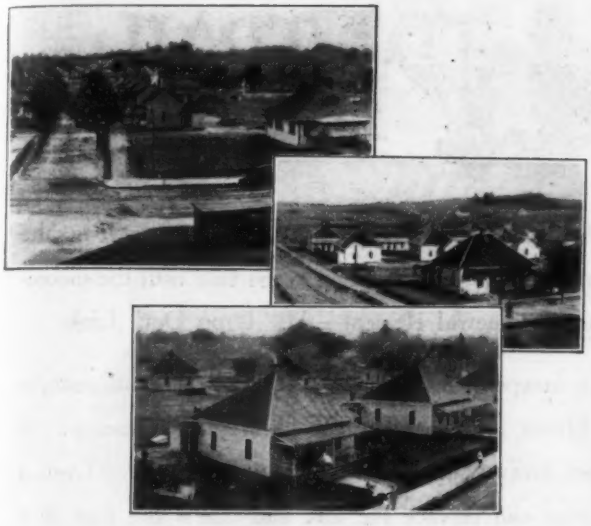

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We began by painting. Then we fixed up the standing houses in good shape and built many new ones. Plenty of room was left for gardens and lawns. We planted trees and shrubbery, graded streets, laid sidewalks, installed water and sewer systems, put all wires underground. Playgrounds were made, including a swimming pool over which a community house will be erected. A dispensary was built and equipped.

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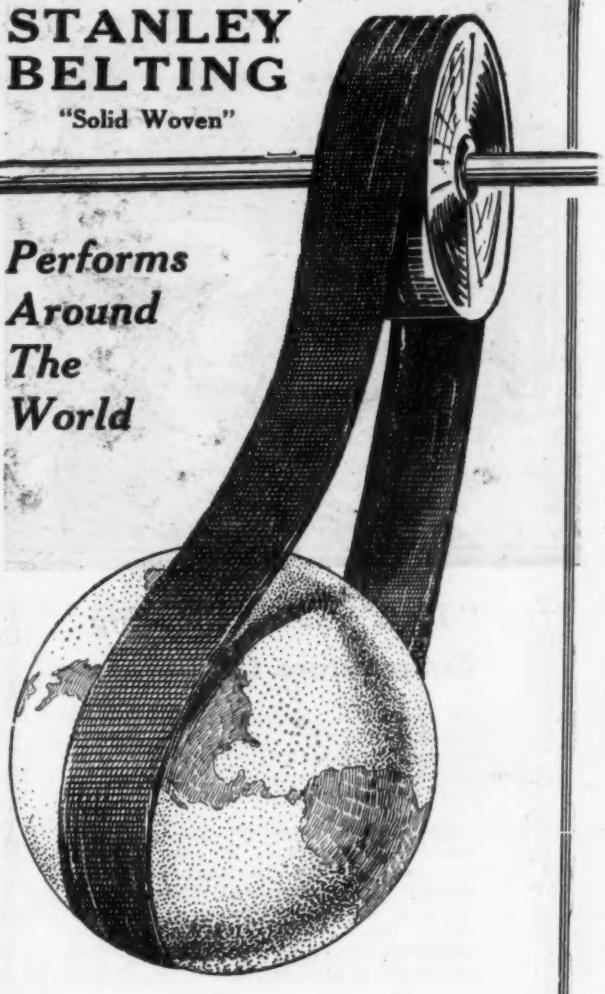

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"**Set it and forget it**" aptly describes the situation because all the operator need do is to "**set**" the controller for the desired temperature and "**forget it**". There is no time and labor wasted "juggling" the hand valves—no fluctuating temperatures—no imperfectly sized warps or streaky and poorly dyed cloth, etc.

The "TAG" controller requires no auxiliary motive power, is easy to install and —due to the fact that it automatically responds to the slightest *tendency* toward a temperature change—spoilage and operating costs are reduced considerably.

If a "Set it and forget it" situation interests you, ask for Bulletin C-387.

P. S.—If you're going to the Southern Textile Show, Greenville, S. C., you are cordially invited to visit our booth, space Nos. 230-233. Our representatives can then give you a practical and convincing demonstration of our various "set it and forget" controllers.

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Sole Manufacturers of "ARKLESS" the Non-Renewable Fuse with the 100 per cent Guaranteed Indicator.

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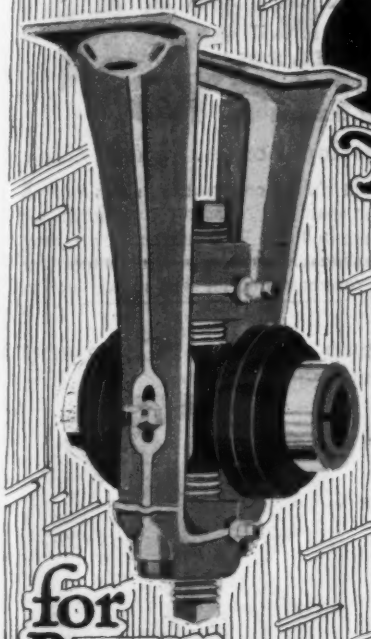

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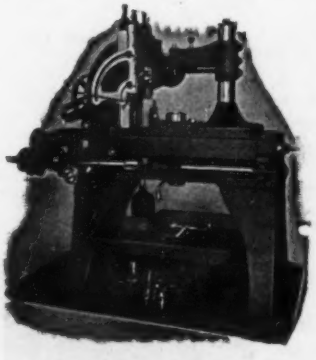

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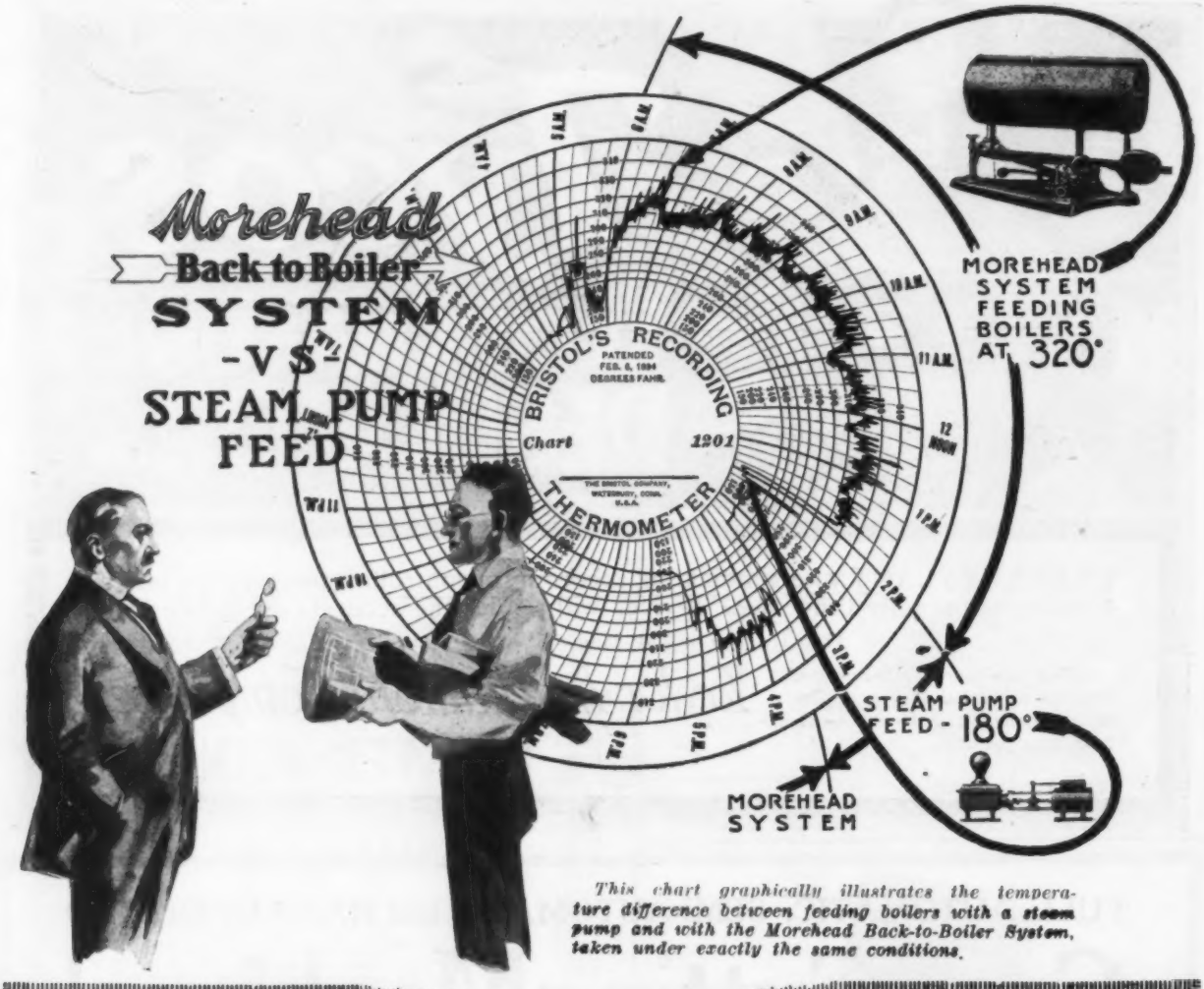

This chart graphically illustrates the temperature difference between feeding boilers with a steam pump and with the Morehead Back-to-Boiler System, taken under exactly the same conditions.

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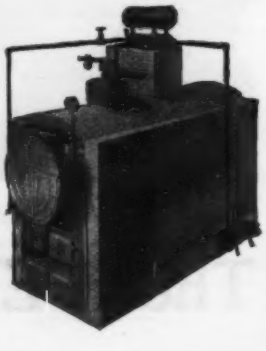
Note the drop in temperature of the returns from the steam lines—shown in the chart—when the boiler is fed with an ordinary steam pump.

Then when the Morehead Back-to-Boiler System is placed in operation, note the steady increase in temperature—which, of course, results in a tremendous fuel saving, frequently as much as 20 per cent—and increased efficiency, of steam heated equipment.



Boilers fed with a steam pump are less efficient because the water of condensation must be allowed to cool down to 212 degrees before the pump can handle it.

With the Morehead System, the water can be returned *immediately* to the boilers at from 275 to 312 degrees—and a gain of one per cent of fuel for every ten degrees increase in heat. Let us send you our catalog and complete information.

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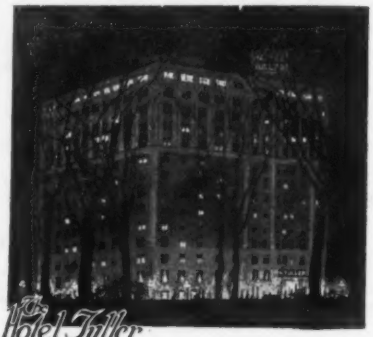


Offers An Attractive Monthly Rate

For Rooms or Apartments for the Winter

WE CAN ASSURE YOU OF

WARMTH AND COMFORT

In the most homelike atmosphere offered by a Hotel anywhere

COURTEOUS SERVICE IS GUARANTEED

We operate four Cafes, where the prices are reasonable and the service will be satisfactory to you.

CAFTERIA PAR EXCELLENCE

SELF SERVICE

MEN'S GRILL

JAPANESE WAITERS

ROSE AND CASCADE ROOMS

COLORED WAITERS

MANDARIN ROOM

JAPANESE WAITERS

We have recently reorganized our entire food service and are making an enviable record for modest charges and courteous and efficient service.

TRY US FOR LUNCHES AND BANQUETS.

HOTEL TULLER.

Classified Opportunities.

Positions Wanted

WANTED—Position as overseer of carding, or assistant superintendent in large mill; or superintendent in small mill. Have been overseer a little over nine years and understand all grades of cotton and machinery. Am 34 years old and married. Desire position in South. Can furnish excellent references. Address Box 300, care COTTON, Atlanta, Ga.

Young man, 31 years of age, married, with 12 years experience in mills and office, textile graduate, desires permanent position in cost and efficiency department of cotton mill. Good references. Address G-95, care Cotton, Atlanta, Ga.

WANTED—Position as Overseer of Carding. 25 years experience. Specialty strong in yarn mill work and have had wide experience on combed work. Prefer South. Address Box 355, care COTTON, Atlanta, Ga.

POSITION WANTED—As Superintendent of Bleachery and Finishing Plant by man with over 25 years experience in bleaching and finishing all grades of cotton piece goods as well as bed spreads, towels, napkin goods with colored borders. Able to supervise the construction of a new plant or remodel an old plant so work can be done in an easier way and at the lowest possible cost. Best of references as to character and ability. 45 years old and married. Address Box 38, care COTTON, Atlanta, Ga.

Positions Open

Wanted—Salesmen

Salesmen calling on the textile mills, and interested in new lines of machinery, paints, building supplies or chemicals, either as a side line or exclusively will find it profitable to write, giving experience, territory covered and other details. Correspondence strictly confidential. All letters acknowledged. Cotton, 1021 Grant Building, Atlanta, Ga.

RATES:

WITHOUT DISPLAY.

"Positions Wanted" 2 cents per word per insertion. Minimum charge 50 cents. Payable in advance.

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

(When replies are to be received in our care, allow four words for box address.)

DISPLAYED.

"For Sale" and all other advertisements using bold-face type or otherwise displayed, $2.00 per inch per insertion.

Rates for larger spaces furnished on application.

For Sale

BARGAIN IN FINE TOOLS.

The following tools are from a private set and have seen little, and in some instances, no usage. The prices shown are the regular list price which will be discounted 33 per cent on single tools or a special price made on the whole outfit. Tools will be shipped by express C. O. D. with privilege of examination:

1 height gauge attachment, $1.75.

1—Brown & Sharpe Vernier depth gauge, No. 600, $12.00.

1—8" Brown & Sharpe Vernier height gauge No. 585, $31.75.

1—10" Brown & Sharpe Vernier caliper No. 570, $25.75.

1 Brown & Sharpe inside micrometer caliper No. 254, 1" to 2", $7.15.

All these tools are in cases except the height gauge attachment.

Apply to Box 17, care COTTON.

Cotton Mill For Sale

Big Opportunity for Textile Interests.

Southern Mill having 20,000 Spindles, electric drive, newly equipped and good labor conditions.

Attractive price and terms.

Address "Owner" care COTTON, Atlanta, Ga.

For Sale.

Efficiency!

Arrows on window show direction of incoming fresh air.

More AIR—More WORK

More ENERGY—Better HEALTH by using

IDEAL VENTILATORS

on windows in your office. Prevent draughts, do not obstruct light, save papers from blowing away. Inexpensive; made of glass. Invaluable in the Home.

Write TODAY for descriptive circular, or telephone for representative to call.

IDEAL VENTILATOR CO.

Providence, R. I.

New and Second Hand

ENGINES

Corliss Automatic and Slide Valve

BOILERS

Pumps, Hoisting Engines, Gas and Gasoline Engines.

MACHINE TOOLS

Lathes, Planers, Shapers, Drill Presses, etc.

WOOD WORKING

Planers, Molders, Band Saws, etc.

ELEC. MACHINERY

Dynamos and Motors

AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,

127-31 N. Third St.

Philadelphia, - Pennsylvania

Buyers' Index

Accident Cabinets.
Thomas Co., F. H.

Acetylene Welding Apparatus.
(See Welding Apparatus.)

Acetylene Gas.
Bird-Wilcox Co.
Commercial Acetylene Supply Co.

Accountants.
(See Auditors and Accountants.)

Accounting Machines and Equipment.
Burroughs Adding Machine Co.
Rand Co., The

Adding Machines.
Burroughs Adding Mch. Co.

Air Brakes.
Allis-Chalmers Mfg. Co.

Air Washers.
Carrier Eng. Corp.
New York Blower Co.
Parks-Cramer Co.
Sturtevant Co., B F.

Air Conditioning Systems.
(See Humidifying Apparatus.)

Albone.
Roessler & Hasslacher Chemical Co.

Alkalies.
(See Dyestuffs and Chemicals.)

Aniline Colors.
(See Dyestuffs and Chemicals.)

Anti-Chlorine.
(See Dyestuffs and Chemicals.)

Aprons—Rub.
Ladew & Co., Inc., Edw. R.
Smith & Furbush Machine Co.
Graton & Knight Mfg. Co.

Architects and Engineers—Mill.
Fiske-Carter Const. Co.
Huntington & Guerry, Inc.
Hoffman & Co., Leon
Slattery & Henry Co.
Lockwood, Greene & Co.
Sirrine, J. E.

Ash Handling Machinery.
American Steam Conveyor Corp.
Hunt Co., C. W.
Link-Belt Company.

Asphalt Slate Shingles.
(See Slate Asphalt Roofing.)

Auditors and Accountants.
American Audit Co.

Auto Trucks.
(See Trucks—Auto.)

Automatic Loom Attachments.
(See Loom Attachments.)

Ball Bearings.
Hyatt Roller Bearing Co.
New Departure Mfg. Co.
Transmission Ball Bearing Co., Inc.
U. S. Ball Bearing Co.

Ball Bearing Spindles.
(See Spindles—Ball-Bearing.)

Bale Band Buckles.
(See Buckles.)

Bale Ties.
Acme Steel Goods Co.
Signode System, Inc.

Baling Machines.
Crompton & Knowles Loom Wks.
Draper Corporation.
Economy Baler Co.
Saco-Lowell Shops.
Seeger-Walraven Co.

Baling Presses.
Butterworth & Sons Co., H. W.
Economy Baler Co.
Philadelphia Drying Mchry. Co.
Seeger-Walraven Co.
Smith & Furbush Mch. Co.

Bandages, Tapes, Etc.
American Textile Banding Co.
Seydel Mfg. Co.

Bandage & Tape Machines.
Seydel Mfg. Co.

Banding Straps and Buckles.
Acme Steel Goods Co.
Signode System, Inc.

Banks.
First National Bank.
Norwood National Bank.

Barometers.
Taylor Instrument Co.

Baskets—Mill.
(See Boxes—Mill.)

Batting & Mattress Stocks.
Richardson & McAlister Co.

Beam Dyeing Machines.
Cocker Mchry. & Foundry Co.

Beam Heads (Steel).
Mossbery Co., Frank

Beaming and Warping Mchry.
(See Warpers and Warping Machinery.)

Bearings.
Hyatt Roller Bearing Co.
New Departure Mfg. Co.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.

Belting.
American Supply Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Greenville Belting Co.
Kelley Co., Henry C.
Ladew & Co., Inc., Edw. R.
Ladew & Co., Inc., Edw. R.
Stanley Belting Corp.
Williams & Co., I. B.

Belt Remaking and Repairing.
Greenville Belting Co.

Belting—Chain Link.
Link-Belt Company.
Morse Chain Co.

Belting—Rope.
(See Rope Transmission.)

Belt Conveyors.
Link-Belt Company.
Morse Chain Co.
Williams & Sons, I. B.

Belt Dressing.
Jos. Dixon Crucible Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Ladew & Co., Inc., Edw. R.
Williams Co., I. B.

Belt Fasteners.
Flexible Steel Lacing Co

Belt Hooks.
Flexible Steel Lacing Co.

Belt Lacing.
Flexible Steel Lacing Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Ladew & Co., Inc., Edw. R.
Stanley Belting Corp.
Williams & Sons, I. B.

Belt Tighteners.
Link-Belt Company.
Williams & Sons, I. B.

Benches (Park & Playground).
Dow Iron & Wire Works.
Manufacturers Equip. & Eng. Co.

Bleacheries.
(See Dyers, Bleachers and Finishers.)

Bleaching Kiers.
Butterworth & Sons Co., H. W.
Philadelphia Drying Machy. Co.
Textile Finishing Machinery Co, The

Bleaching Machinery.
(See Dyeing, Bleaching & Finishing Machinery.)

Bleaching Materials.
Arabol Mfg. Co.
Arnold-Hoffman & Co., Inc.
Atlantic Dyestuff Co.
Barrett Co.
Bosson & Lane.
Dicks-David Co., Inc.
Douglas Co.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co
Electric Smelting & Alum. Co.
Grasselli Chemical Co.
Hemingway, Inc., Frank
Kali Mfg. Co.
Klipstein & Co., A.
Levinstein & Co., Inc.
National Aniline & Chemical Co.
Newbert Color Co.
Newport Chemical Works, Inc.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co.
Stein, Hall & Co.
Sonneborn Sons, Inc., L.
Wolf & Co., Jacques
Zavon, Inc.

Blowers and Blower Systems.
Carrier Eng. Corp.
General Electric Co.
Howard & Morse.
Ideal Elec. Co.
New York Blower Co.
Phila. Drying Machinery Co
Southern Textile Mchry. Co.
Sturtevant Co., B. F.
Westinghouse Elec. & Mfg. Co.

Boards—Form.
Paramount Hosiery Form Drying Co.
Pearson, Jos. T.

Bobbins.
Draper Corporation.
Jordan Mfg. Co.
Shambow Shuttle Co.
Whitin Machine Works.

Boilers.
Carpenter Co., Geo. B.
Collins, J. D.
Lombard Iron Works & Supply Co.
Schofield's Co., J. S.
Southern Textile Mchry. Co.
Toomey, Frank
Walsh & Weidner Boiler Co.

Boiler Feed Water Purification.
Scaife & Sons, Wm. B.

Boiler Fittings
Lunkenheimer Co.
Southern Textile Mchry. Co.

Boiler Graphite.
Jos. Dixon Crucible Co.

Bookkeeping Systems and Machines.
Burroughs Adding Mch. Co.
Rand Co.

Box Strapping and Tie Buckles.
Acme Steel Goods Co.
Draper Corporation.
Signode System, Inc.

Boxes—Mill.
Keystone Fibre Co.
Lane & Bro.
Leatheroid Sales Co
Rogers Fibre Co.
Southern Textile Mchry. Co.
Standard Fibre Co.

Braids.
(See Tapes.)

Brokers (Cotton).
Beer, H. & B.
Cooper & Griffin, Inc.
Richardson & McAlister Co.
Sloan Co., N. P.

Brushes—Mill.
Felton Brush Co., D. D.
Felton, S. A. & Son Co.

Brushes—Commutator.
Dixon Crucible Co., Jos.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Buckets & Pails—Mill.
Keystone Fibre Co.
Leatheroid Sales Co.
Rogers Fibre Co.
Standard Fibre Co.

Buckets—Elevator and Grab.
Link-Belt Company.

Buckles—Cotton Tie.
(See Box Strappings and Ties.)

Building Contractors.
(See Architects & Engineers.)

Buildings—Steel Portable.
Fiske-Carter Construction Co.
Lockwood, Greene & Co.

Building Material.
Anchor Post Iron Works.
Carpenter Co., Geo. B.
Barrett Co., The
Detroit Graphite Co.
Dufur & Co.
Fiske-Carter Construction Co.
Lockwood, Greene & Co.
Nashville Hardwood Flooring Co.
Page Steel & Wire Co.

Burr Pickers.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co

Bushings.
Southern Spindle & Flyer Co.

Calenders.
Textile Finishing Mchy. Co.

Calender Rolls.
Roy & Son, B. S.

Calling System (Inter Telephone).
Carter Elec. Co.
Collins, J. D.
Ideal Elec. Co.

Cans—Roving.
Keystone Fibre Co.
Leatheroid Sales Co
Rogers Fibre Co.
Standard Fibre Co.

Cars and Trucks—Fibre.
(See Trucks.)

Carbonizing Machines.
Philadelphia Drying Machy. Co.
Phila. Textile Mchy. Co.
Sargents Sons & Co., C. G.
Textile Finishing Machinery Co., The

Carding Machinery
Howard & Bullough.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Card Clothing.
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Card Feeds.
Schofield, Wm. Co.
Smith & Furbush Mach Co.
Whitin Machine Co.

Card Grinding Machinery.
Roy & Son Co., B. S.
Smith & Furbush Mch. Co.
Whitin Machine Works.

Carpet Machinery.
Butterworth, H. W., & Sons Co.
Crompton & Knowles Loom Wks.
Philadelphia Drying Machry. Co.
Phila. Textile Machy. Co.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.
Textile Finishing Machy. Co., The

Carrier Aprons.
(See Aprons.)

Caustic Soda.
(See Bleaching Materials.)

Cement Machinery.
Allis-Chalmers Mfg Co.

Jement and Brick Coating.
Detroit Graphite Co.
Dixon Crucible Co., Jos.
Piper Roofing Co., J. A.
Wadsworth Howland & Co.

Chain Drives.
(See Belting—Chain Link.)

Chain (Block, Bicycle, Auto Engine, Agricultural, Etc.)
Morse Chain Co.

Chairs and Stools (Steel).
Manufacturers Equip. & Eng. Co.

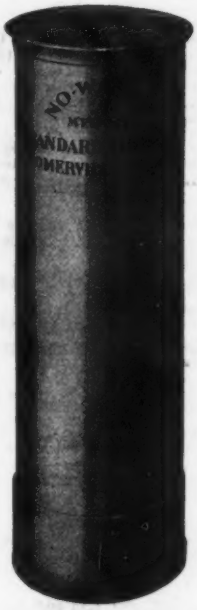
Checks—Metal.
(See Stamps, Stencils, etc.)

STANDARD MILL RECEPTACLES

NO-WASTE

SEAMLESS ROVING CANS

CARS, DOFFING-TRUCKS, BOXES, TAPER BASKETS, BARRELS



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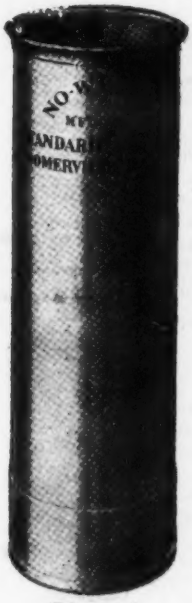

Fibre and Metal Tops

STANDARD FIBRE CO.

25 Miller Street, Somerville, Massachusetts

Photograph of

Our Celebrated Coaster Slide

in Action

WE are the originators and patentees of the Wave Slide, patent No. 1239848. All persons are warned against purchasing other slides violating our patent. Write for our illustrated catalogue.

American Playground Device Company

AWARDED GOLD MEDAL PANAMA CALIFORNIA EXPOSITION 1915.

ANDERSON, IND.

Manufacturers of

PARK AND PLAYGROUND EQUIPMENT

PORCH AND LAWN FURNITURE

AGRICULTURAL, BABY CARRIAGE AND

GO-CART WHEELS, STEEL AND RUBBER TIRE

BUYERS' INDEX—Continued.

Chemicals.
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Chlorine Gas.
Electro Bleaching Gas Co.

Clocks (Hank, Etc).
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Closets (Water).
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Cloth Cutters.
Firsching, J. A.
Wildman Mfg. Co.

Cloth Balers.
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Cloth Room Machinery.
Butterworth, H. W. & Sons Co.
Firsching, J. A.
Saco-Lowell Shops.
Southern Novelty Co.
Textile Finishing Machinery Co.
Wildman Mfg. Co.

Cloth Shrinking Machinery.
Reliance Machine Works.

Cloth Tubes.
Southern Novelty Co.

Cloth Winders.
(See Winders.)

Clutches (Friction).
American Pulley Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Transmission Ball Bearing Co

Coal Driers (Centrifugal).
Link-Belt Company.

Coal Handling Machinery.
Hunt Co., C. W.
Link-Belt Company.

Coal Tar Disinfectants.
(See Disinfectants.)

Cocks.
Lunkenheimer Co.

Cloors.
(See Dyestuffs and Chemicals.)

Color Pails.
(See Buckets—Mills.)

Comb Aprons.
(See Aprons.)

Commission Merchants and Dealers.
(See Cotton Cloth Commission Merchants.)

Compresses (Cotton).
Bridge & Co., Ltd., David

Compression (High Density).
Bridge & Co., Ltd., David

Compressors, Air.
Allis-Chalmers Mfg. Co.
General Electric Co.
Seeger-Walraven Co.

Condensers.
Allis-Chalmers Mfg. Co.
Seger-Walraven Co.

Cone Winding Machines.
Foster Machine Co.
Universal Winding Co.

Connectors (Frankel Solderless).
Westinghouse Elec. & Mfg. Co.

Contractors (Building).
(See Architects and Engineers.)

Controlling Instruments (Temperature).
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Conveying Machinery.
American Pulley Co.
American Steam Conveyor Corp.
American Supply Co.
Carpenter Co., Geo. B.
Collins, J. D.
Cresson-Morris Co.
Hunt Co., C. W.
Link-Belt Co.
Morse Chain Co.
Phila. Drying Machinery Co.
Phila. Textile Machy. Co.
Saco-Lowell Shops.
Schofield, Wm. Co.
Seeger-Walraven Co.
Smith & Furbush Machine Co.
Whitin Machine Works.

Coolers.
(See Humidifying Apparatus.)

Coolers (Water).
(See Water Coolers).

Cooling Towers.
(See Tanks and Towers.)

Copper Stamps and Stencils.
(See Stamps, Stencils, Etc.)

Cordage Machinery.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co., The

Cotton Cloth Commission Merchants and Dealers.
Carver-Beaver Yarn Co., Inc.
Cooper & Griffin, Inc.
Fawcett, Hughes.
Hunter Mfg. & Comm. Co.
Sloan Co., N. P.
Southern Cotton Yarn Co.
Turner Co., J. Spencer
Weimar Bros.
Wellington, Sears & Co.
Woodward, Baldwin & Co.

Cotton Dealers and Brokers.
(See Brokers.)
Cocker Mch. & Foundry Co.

Cotton Mill Machinery.
American Warp Drawing Mch. Co.
Barber-Colman Co.
Butterworth & Sons, H. W.
Carpenter Co., Geo. B.
Cocker Mch. & Foundry Co.
Crompton & Knowles Loom Wks.
Delahunty Dyeing Machine Co.
Draper Corporation.
Firsching, J. A.
Foster Machine Co.
Fletcher Works.
Hopedale Mfg. Co.
Howard & Bullough.
Phila. Drying Mchy. Co.
Phila. Textile Machy. Co.
Sargent's Sons, Corp., C. G.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Southern Textile Mchy. Co.
Stafford Co.
Terrell Machine Co.
Textile Finishing Machinery Co.
Universal Winding Co.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

Cotton Mill Machinery (Rebuilt).
Carolina Supply Co.
Southern Textile Mchy. Co.

Cotton Tape Loom.
Fletcher Works.
Schaum & Uhlinger.

Cotton Yarn Mills.
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Coupling (Rope).
Hunt Co., C. W.

Counters (Revolution, Hank, Pick, Etc.).
Veeder Mfg. Co.

Cranes (Locomotive).
Link-Belt Company.

Crayons.
American Crayon Co.
Dixon Crucible Co., Jos.

Crushing Machinery.
Allis-Chalmers Mfg. Co.

Cutters (Cloth).
(See Cloth Cutters.)

Cutters (Thread).
(See Thread Cutters.)

Dictaphones.
Columbia Graphophone Co.

Dies (Steel).
(See Stamps, Stencils, etc.)

Disinfectants.
Barrett Co., The

Dobby Chains.
Crompton & Knowles Loom Wks.
Whitin Machine Works.

Doffing Boxes (Mill).
(See Boxes—Mill.)

Door Mats (Steel).
Acme Steel Goods Co.
Tagliabue Mfg. Co., C. J.

Doublers.
Foster Machine Co.

Draft Gauges and Thermometers.
Taylor Instrument Co.

Drawing Frames.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Drawing-in Machines.
American Warp Drawing Mch. Co.

Drills (Electric).
(See Electric Machinery.)

Drinking Fountains.
(See Fountains—Drinking.)

Dust Collectors.
(See Blowers and Blowing Systems.)

Dusting Machinery.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Drying Forms (Hosiery).
Paramount Hosiery Form Drying Co.
Pearson, Jos. T.

Dyers, Bleachers and Finishers.
Arnold-Hoffman Co., Inc.
Home Bleach & Dye Works.

Drying Machinery.
American Laundry Mchry. Co.
Butterworth, H. W. & Sons Co.
Sargent's Sons Corp., C. G.
Textile Finishing Machinery Co., The

Dyeing, Bleaching, Finishing and Printing Machinery.
American Laundry Mchry. Co.
Butterworth & Son Co., H. W.
Cocker Mch. & Foundry Co.
Delahunty Dyeing Machine Co.
Electro Bleaching Gas Co.
Firsching, J. A.
Fletcher Works.
Phila. Drying Machinery Co.
Phila. Textile Machy Co.
Reliance Machine Works.
Schaum & Uhlinger.
Textile Finishing Machinery Co., The
Tolhurst Machine Works.

Dye Sticks.
Phila. Drying Machinery Co.

Dyestuffs and Chemicals.
Arabol Mfg. Co.
Arnold-Hoffman & Co.
Atlantic Dyestuff Co.
Barrett Co.
Bosson & Lane.
Dicks, David Co., Inc.
Douglas Co.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Grasselli Chemical Co.
Hemingway, Inc., Frank
Holland Aniline Co.
Kali Mfg. Co.
Klipstein & Co., A.
Levinstein & Co., Inc.
Lewis, John D.
Metz & Co., H. A.
National Aniline & Chemical Co.
Newbert Color Co.
Newport Chemical Works, Inc.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co.
Sherwin-Williams Co.
Sonneborn Sons, Inc., L.
Stein, Hall & Co.
Wolf & Co., Jacques.
Zavon, Inc.

Electric Dynamos and Motors.
(See Motors and Generators.)

Electric Fans.
(See Fans—Electric.)

Electric Lamps.
(See Lamps.)

Electric Lamp Guards.
Flexible Steel Lacing Co.

Electrical Installations.
Huntington & Guerry, Inc.

Electrical Machinery and Supplies.
Allis-Chalmers Mfg. Co.
Carolina Supply Co.
Carpenter Co., Geo. B.
Carter Electric Co.
Chicago Fuse Mfg. Co.
Economy Fuse & Mfg. Co.
Federal Sign System (Electric)
General Electric Co.
Huntington & Guerry.
Ideal Elec. Co.
Seeger-Walraven Co.
Snow & Co., E. W.
Southern Textile Mchry. Co.
Walsh & Weidner Boiler Co.
Westinghouse Electric & Mfg. Co.

Electric and Gas Service.
Sou. Public Utilities Co.

Electric Signs.
Federal Sign System (Electric).

Electric Sirens.
Federal Sign System (Electric).

Electric Tractors and Trucks.
Baker, R. & L. Co.
Cowan Truck Co.
Elwell-Parker Elec. Co.
Hunt Co., C. W.

Elevators.
Collins J. D.
Hunt Co., C. W.
Link-Belt Company.
Seeger-Walraven Co.

Enamel—Mill White.
(See Paint—Mill White.)

Engineers (Mill).
(See Architects.)

Engines—Oil, Gas and Gasoline.
Carpenter Co., Geo. B.
Seeger-Walraven Co.
Southern Textile Mchry. Co.

Engines—Steam.
Allis-Chalmers Mfg. Co.
Carpenter Co., Geo. B.
Collins, J. D.
Lombard Iron Works & Supply Co.
Schofield's Sons Co., J. S.
Seeger-Walraven Co.
Southern Textile Mchry. Co.
Toomey, Frank
Walsh & Weidner Boiler Co.

Engine Appliances—Oil and Steam.
Carpenter Co., Geo. B.
Lunkenheimer Co.
Southern Textile Mchry. Co.

Engine Room Supplies.
Carpenter Co., Geo. B.
Goodyear Tire & Rubber Co.
Lunkenheimer Co.
Graton & Knight Mfg. Co.
Southern Textile Mchry. Co.

Extractors—Hydro.
American Laundry Mchry Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

Fans—Electric.
Allis-Chalmers Mfg. Co.
Carolina Supply Co.
Carter Electric Co.
General Electric Co.
Ideal Elec. Co.
Howard & Morse
Westinghouse Elec. & Mfg. Co.

Fans—Conveying, Power and Exhaust.
(See Blowers and Blowing Systems.)

Feed Water Purifiers.
(See Water Softeners.)

Felting Machinery.
Smith & Furbush Mach. Co.

Fence—Steel and Iron.
Anchor Post Iron Works.
Cyclone Fence Co.
Page Steel & Wire Co.

Fibre Products.
Keystone Fibre Co.
Lane & Bro., W. T.
Leatheroid Sales Co.
Rogers Fibre Co.
Standard Fibre Co.

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BUYERS' INDEX—Continued.

Filters—Water.
(See Water Softening.)

Finishing.
(See Dyers, Bleachers and Finishers.)

Finishing and Sizing Materials.
Arabol Mfg. Co.
Arnold-Hoffman & Co., Inc.
Atlantic Dyestuff Co.
Bosson & Lane.
Corn Products Refining Co.
Dicks, David Co., Inc.
Douglas Co.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Grasselli Chemical Co.
Hemingway, Inc., Frank
Kali Mfg. Co.
Klipstein & Co., A.
Levinstein & Co., Inc.
Newport Chemical Works, Inc.
Metz & Co., H. A.
Newbert Color Co.
National Aniline & Chemical Co.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co.
Sherwin-Williams Co.
Sonneborn Sons, Inc., L.
Stein, Hall & Co.
Warren Soap Mfg. Co.
Wolf & Co., Jacques
Zavon, Inc.

Fire Escapes (Spiral).
Collins, J. D.

Fire Hose.
(See Hose—Fire.)

Fire Protecting Paint.
(See Paint—Fireproof.)

First Aid Room Equipment.
(See Hospital Equipment.)

Flooring (Hardwood).
Nashville Hardwood Flooring Co.

Fluted Rolls.
Howard & Bullough.
Saco-Lowell Shops.
Schofield's Sons Co., J. S.
Smith & Furbush Machine Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Flyers.
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Fountains (Drinking).
Manufacturers Equip. & Eng. Co.
Puro Sanitary Drinking Fountain Co.

Friction Clutches.
(See Clutches—Friction.)

Fuses.
(See Elec. Mchy. and Supplies.)

Garnett Machines.
Roy Son Co., B. S.
Smith & Furbush Mach. Co.

Gas Engines.
(See Engines—Gas.)

Gaskets.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.

Gauge Cocks.
Lunkenheimer Co.

Gauges—Draft.
Taylor Instrument Co.

Gauges—Mercury Column Vacuum
Taylor Instrument Co.

Gauges—Oil.
Lunkenheimer Co.

Gauges—Water.
Lunkenheimer Co.

Gears—Silent.
General Electric Co.
Link-Belt Co.
Morse Chain Co.

Gear Cutters.
Cresson-Morris Co.
Whiton Mch. Co., D. E.

Gear Pullers.
Greb Co., Inc.

Generators—Electric.
(See Motors and Generators.)

Graphite—Products.
Dixon Crucible Co., Jos.

Grates—Shaking.
Collins, J. D.
Lombard Fdy. & Mch. Co.

Grease.
(See Lubricants.)

Grease Cups.
(See Lubricators.)

Grinders—Card, Cylinder Roll, Napper and Garnett.
(See Card Grinding Machinery.)

Guards (Elec. Lamp.
Flexible Steel Lacing Co.

Guides (Thread).
Mitchell-Bissell Co.
Palmer Co., I. E

Gums.
(See Finishing and Sizing Materials.)

Hangers.
(See Shafting and Hangers.)

Hardwood.
Nashville Hardwood Flooring Co.

Harness—Loom.
American Supply Co.
Crompton & Knowles Loom Wks.
Emmons Loom Harness Co.
Garland Mfg. Co.
Electro Bleaching Gas. Co.

Heaters (Water).
Manufacturers Equip. & Eng. Co.

Heating and Ventilating Apparatus.
(See Ventilating Apparatus.)

Heddles.
Crompton & Knowles Loom Wks.
Draper Corporation.

Heddle Frames.
Crompton & Knowles Loom Wks.

Hoists.
Link-Belt Company.
Morse Chain Co.
Seeger-Walraven Co.

Hose—Fire.
Goodyear Tire & Rubber Co.

Hosiery Finishing Boards.
(See Boards.)

Hosiery Forms.
(See Drying Forms.)

Hosiery Yarns.
(See Yarn Manufacturers.)

Hospital Equipment.
Thomas Co., F. H.

Hotels.
DeSoto.
Marquette.
Martinique.
Sinton.
Tuller.

Humidifying Apparatus.
Carrier Eng. Corp.
New York Blower Co.
Parks-Cramer Co.
Sturtevant Co., B. F.

Hydraulic Turbines.
(See Turbines Steam.)

Hydro Extractors.
(See Extractors.)

Hydrometers.
Taylor Instrument Co.

Hygrometers.
Taylor Instrument Co.

Hygrodeiks.
Taylor Instrument Co.

Indicating and Recording Instruments.
Taylor Instrument Co.
Tagliabue Mfg. Co., C. J.

Indigo.
(See Dyestuffs and Chemicals.)

Injectors.
Lunkenheimer Co.

Ink—Stencil and Marking.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
National Marking Machine Co.

Iron Work—Ornamental.
Anchor Post Iron Works.
Cyclone Fence Co.
Dow Wire & Iron Works.
Dufur & Co.
Howard & Morse.
Lombard Iron Works & Supply Co.
Page Steel & Wire Co.

Jacquards.
Crompton & Knowles Loom Wks.

Jute Bagging Machines.
Smith & Furbush Mach. Co.

Kettles—Size.
(See Size Kettles.)

Kettles—Soda
Lombard Iron Works & Sup. Co.
Manufacturers Equip. & Eng. Co.

Kiers.
(See Bleaching Kiers.)

Knit Goods.
(See Cotton Cloth Commission Merchants and Dealers.)

Knit Goods Washers.
(See Washers—Cloth.)

Knitting Machinery.
Boss Knitting Mach. Works.
Brinton Co., H.
General Machine Works.
Hemphill Mfg. Co.
Nye & Tredick Co.
Scott & Williams.
Smith & Furbush Mach. Co.
Wildman Mfg. Co.

Lamps—Incandescent and Arc.
Boston Economy Lamp Div.
Carolina Supply Co.
Carter Electric Co.
General Elec. Co.
Ideal Elec. Co.
Southern Textile Mchy. Co.
Westinghouse Lamp Co.

Lamp Guards (Key Locking).
Flexible Steel Lacing Co.

Lamp Reflectors.
Carter Elec. Co.
Ideal Elec. Co.
Ivanhoe-Regent Works.

Landscape Architects.
(See Village Architects.)

Lappers.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Laundry Machinery.
American Laundry Mchry Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

Lease Picking Machines.
American Warp Drawing Mch. Co.

Leather Belting.
(See Belting.)

Leather Specialties.
American Supply Co.
Graton & Knight Mfg. Co.
Ladew & Co., Inc., Edw. R.
Williams & Sons, I. B.

Linen Yarns.
(See Yarns—Linen.)

Link Belting.
(See Belting—Link.)

Liquid Chlorine.
(See Chlorine.)

Loaders—Wagon and Trucks.
Link-Belt Company.

Lockers (Metal).
Manufacturers Equip. & Eng. Co.

Logwood Extract.
(See Dyestuffs and Chemicals.)

Looms.
Crompton & Knowles Loom Wks.
Draper Corporation.
Fletcher Works.
Hopedale Mfg. Co.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield Wm. & Co.
Stafford Co., The
Whitin Machine Works.

Loom Attachments (Auto).
Draper Corp.
Hopedale Mfg. Co.

Lubricants.
Dixon, Jos., Crucible Co.
Kellogg & Co., E. H.
N. Y. & N. J. Lubricant Co.
Swan & Finch Co.

Lubricators.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.

Lug Straps.
(See Straps—Lug.)

Lumber.
Nashville Hardwood Flooring Co.

Marking Pots, Stencils, Inks, Etc.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
National Marking Machine Co.

Marking Machines.
National Marking Machine Co.

Mattress & Batting Stocks.
Richardson & McAlister Co.

Mercerized Yarns.
(See Yarns Mercerized.)

Mercerizers.
Home Bleach & Dye Works.

Mercerizing Machinery.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

Metal Ceilings, Etc.
Lupton's Sons Co., David.

Metal Workers—Sheet.
Lombard Iron Works & Supply Co.
Howard & Morse.
Page Steel & Wire Co.

Meters—Flow, Air, Gas, Electric, Steam, Etc.
Allis-Chalmers Mfg. Co.
Carter Electric Co.
General Electric Co.
Ideal Elec. Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.
Westinghouse Elec. & Mfg. Co.

Meters (Revolution).
Taylor Instrument Co.

Mill Baskets and Boxes.
(See Boxes—Mill.)

Mill Engineer.
(See Architects and Engineers.)

Mill Villages.
(See Villages.)

Mill White Paint.
(See Paint—Mill White.)

Motors and Generators—Electric.
Allis-Chalmers Mfg. Co.
Carolina Supply Co.
Carter Electric Co.
Ideal Elec. Co.
General Electric Co.
Seeger-Walraven Co.
Southern Textile Mchry. Co.
Westinghouse Elec. & Mfg. Co.

Mule Stands.
Transmission Ball Bearing Co.

Nappers.
Roy & Son Co., B. S.

Oils—Finishing.
(See Finishing and Sizing Materials.)

Oils—Lubricating.
(See Lubricants.)

Oil Cups.
(See Lubricators.)

Oil Paper.
Bradley Mfg. Co., A. J.

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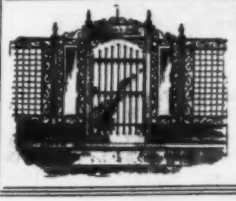

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Oiling Devices.
(See Lubricators.)

Openers for Cotton, Wool, Waste Etc.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Oxidizing Machinery.
Phila. Drying Machinery Co.

Oxygen.
Bird Wilcox Co.
Commercial Acetylene Supply Co.

Packings.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.

Paint.
Barrett Co., The.
Chaffee, Thos. K.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Sherwin-Williams Co.
Wadsworth, Howland & Co.

Paint—Preservative and Fireproof.
Barrett Co.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Sherwin-Williams Co.
Wadsworth, Howland & Co.

Paint—Mill White.
Chaffee Thos. K.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Sherwin-Williams Co.
Wadsworth, Howland & Co.

Paper—Oil.
Bradley Mfg. Co., A. J.

Perforated Metal.
(See Screens and Sieves.)

Peroxides.
Roessler & Hasslacher Chemical Co.

Phonographs (Dictating).
Columbia Graphophone Co.

Pianos.
Stieff, Inc., Chas. M.

Pickers—Curled Hair.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.

Pickers—Leather.
Garland Mfg. Co.

Picker Sticks.
Garland Mfg. Co.

Picking Machinery.
Howard & Bullough, Am. Machine Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Pickings and Linters.
Richardson & McAlister Co.

Pipe Fittings.
Lunkenheimer Co.

Pipe Threading & Cutting Machines.
Seeger-Walraven Co.

Playground Equipment.
American Playground Device Co.
Dow Wire & Iron Works.
Hill-Standard Co.

Power Transmission.
Allis-Chalmers Mfg. Co.
American Pulley Co.
American Supply Co.
Carpenter Co., Geo. B.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
General Electric Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Greenville Belting Co.
Hyatt Roller Bearing Co.
Kelly Co., Henry C.
Ladew & Co., Inc., Edw. R.
Link-Belt Company.
Morse Chain Co.
New Departure Mfg. Co.
Seeger-Walraven Co.
Southern Textile Mchry. Co.
Stanley Belting Corp.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.
Westinghouse Elec. & Mfg. Co.
Williams & Sons, I. B.

Presses.
American Laundry Machnry. Co.
Bridge & Co., Ltd., David
Butterworth & Sons Co., H. W.
Economy Baler Co.
Phila. Drying Machine Co.
Reliance Machine Works.
Seeger-Walraven Co.
Smith & Furbush Mch. Co.
Textile Finishing Machinery Co. The

Pulleys.
American Pulley Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Seeger-Walraven Co.
Transmission Ball Bearing Co.

Pulley Covering.
Goodyear Tire & Rubber Co.
Stanley Belting Corp.
Williams & Sons, I. B.

Pumps.
Allis-Chalmers Mfg. Co.
Collins, J. D.
Seeger-Walraven Co.
Textile Finishing Machinery Co.
Walsh & Weidner Boiler Co. The
Toomey, Frank.
Westinghouse Elec. & Mfg. Co.

Pump Valves.
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Psychrometers (Sling.)
Taylor Instrument Co.

Pyrometers.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Quill Cleaning Machines.
Terrell Mch. Co.

Railings.
Dufur & Co.

Recording Instruments.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Reeds.
American Supply Co.
Emmons Loom Harness Co.

Reed Cleaning Machines.
American Warp Drawing Mch. Co.

Reels.
Crompton & Knowles Loom Wks.
Draper Corporation.
Saco-Lowell Shops.
Schofield, Wm. Co.
Whitin Machine Works.

Reflectors (Lamp)
Ivanhoe-Regent Works.

Regulators—Pressure
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Regulators—Temperature.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Repairing Belting.
Greenville Belting Co.

Repairing—Textile of all kinds.
General Machine Works.
Southern Spindle & Flyer Co.
Southern Textile Mchy. Co.

Rewinding.
Universal Winding Co.

Rib Top Cutters.
General Machine Works.
Wildman Mfg. Co.

Ring Travelers—Steel and Bronze.
Whitinsville Spinning Ring Co.
Whitin Machine Works.

Rings—Spinning.
(See Spinning Rings.)

Rocker Shaft Bearings.
(See Bearings.)

Rolls (Calender).
Roy & Son Co., B. S.

Rolls—Steel.
Southern Spindle & Flyer Co

Roofing.
Barrett Co., The
Cortright Metal Roofing Co.
Detroit Graphite Co.
Piper Roofing Co., J. A.
Wadsworth, Howland & Co.

Roof and Cement Coating.
Barrett Co.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Piper Roofing Co., J. A.
Sherwin-Williams Co.
Wadsworth, Howland & Co.

Rope—Transmission.
American Pulley Co.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Hunt Co., C. W. Inc.
Kelly Co., Henry C.
Link-Belt Company.

Roving Cans and Trucks.
(See Cans—Roving.)

Roving Machinery.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Rubber Stamps.
(See Stamps, Stencils, Etc.)

Rubber Goods.
Goodyear Tire & Rubber Co.

Sanitary Closet Cans.
Sanitary Eng. Co.
Selig Co.

Sanitary Products.
Cement Products Co.
Kaustine Co.
Rundle-Spence Mfg. Co.
Sanitary Eng. Co.
Selig Co.
Vogel Co., Jos. A.

Sash-Window—Steel.
Lupton's Sons Co., David.

Scales—Automatic.
American Kron Scale Co.
Standard Scale & Supply Co.

Scale Presenter (Boiler).
See Boiler Feed Water Purification.

Screens & Sieves—Perforated.
Erdle Perforating Co.
Link-Belt Company.

Sewing Machines.
Merrow Machine Co., The.
Textile Finishing Mchy Co.
Willcox & Gibbs Sewing Mach. Co.

Shafting & Hangers.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Co.
Seeger-Walraven Co.
Transmission Ball Bearing Co.

Shears.
Roy & Son Co., B. S.

Shelving—Sectional Steel.
Lupton's Sons Co., David.
Manufacturers' Equipment & Eng. Co.

Shingles—Asphalt.
Barrett Co.

Shingles—Metal.
Cortright Metal Roofing Co

Shuttles.
Crompton & Knowles Loom Wks.
Draper Corporation.
Hopedale Mfg. Co.
Shambow Shuttle Co.

Sirens (Electric).
Federal Sign System (Electric).

Singeing Machinery.
Butterworth & Sons Co., H. W.
Phila. Drying Machine Co.
Textile Finishing Machinery Co. The

Size Box Temperature Controller.
Tagliabue Mfg. Co., C. J.

Size Kettles.
Butterworth, H. W. & Sons Co.
Howard & Bullough, American Machine Co.
Lombard Iron Works & Sup. Co.
Manufacturers Equip. & Eng. Co.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The

Sizing and Finishing Compounds.
(See Finishing & Sizing Materials.)

Skewers.
Greenville Spool & Mfg. Co.
Jordan Mfg. Co.

Skylights—Steel.
Lupton's Sons, Co., David.

Slashers and Slasher Room Supplies.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Howard & Bullough.
Mossberg Co., Frank
Saco-Lowell Shops.
Textile Finishing Machinery Co. The

Slasher Hoods.
Piper Roofing Co., J. A.

Slate Asphalt Roofing.
Barrett Co.
Piper Roofing Co., J. A.

Slubbers.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Soap—Textile.
Arnold, Hoffman & Co., Inc.
Atlantic Dyestuff Co.
Douglas Co.
Dicks, David Co., Inc.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Grisselli Chemical Co.
Hemingway & Co., Frank.
Kali Mfg. Co.
Klipstein & Co., A.
Levinstein & Co., Inc.
Newbert Color Co.
Newport Chemical Works.
Sonneborn Sons, Inc., L.
Stein, Hall & Co., Inc.
Warren Soap & Mfg. Co.
Wolf & Co., Jacques.

Softeners—Cotton.
Arnold, Hoffman & Co.
Atlantic Dyestuff Co.
Arabol Mfg. Co.
Bosson & Lane.
Dicks, David Co., Inc.
Douglas Co.
Du Pont de Nemours & Co., E. I.
Grasselli Chemical Co.
Hemingway & Co., Frank.
Kali Mfg. Co.
Klipstein & Co., A.
Levinstein & Co., Inc.
Newbert Color Co.
Newport Chemical Works.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co.
Sonneborn Sons, Inc., L.
Stein, Hall & Co., Inc.
Wolf & Co., Jacques.
Zavon, Inc.

Softeners—Water.
(See Water Softeners.)

Solderless Connectors (Frankel.)
Westinghouse Elec. & Mfg. Co.

Solvents.
(See Finishing.)

Spindles.
Draper Corporation.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Spindles—Ball Bearing.
Draper Corporation.
Howard & Bullough.
New Departure Mfg. Co.
Saco-Lowell Shops.
Smith & Furbush Machine Co.
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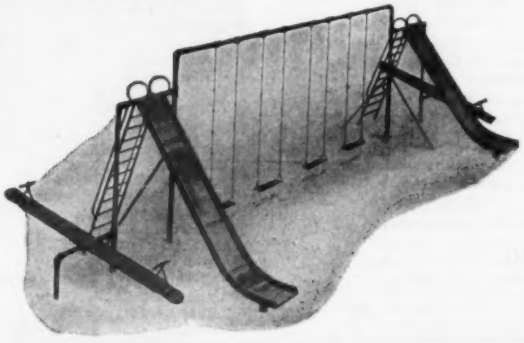

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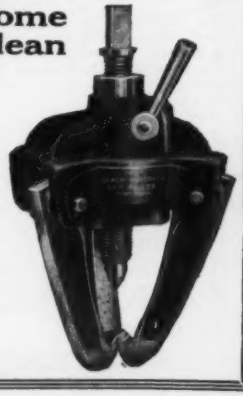

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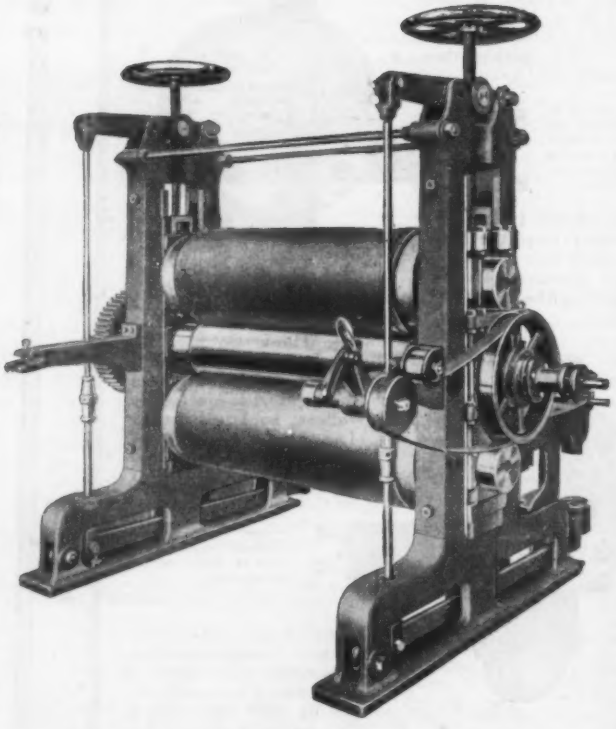

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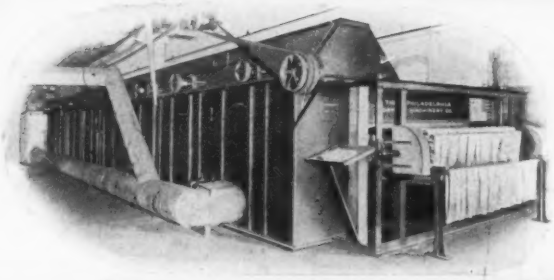

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Try It in Your Mill

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No material changes in your present method of bleaching re needed to use it
Send for full particulars and get posted to your advantage.

ELECTRO BLEACHING GAS CO., 18 East 41st Street, New York
Pioneers and Leading Manufacturers of Liquid Chlorine

Nothing Contributes as Much to Production as Comfortable, Contented Workers.

Hot, sultry days of summer put a lax, don't-care spirit among your operatives—which obviously tends to decrease production.

Isn't it reasonable to believe that refreshing, ice-cooled, sanitary drinking water would offset to a great extent this drag on your profits? Isn't it reasonable to believe that an ice-cooled fountain at the workers' elbow will keep him refreshed and more contented and energetic?

Don't consider an installation of PURO Drinking Fountains merely welfare work—but as an investment that will increase your production—which it will. Not only in this way—but it protetes health as it is absolutely sanitary—the only drinking fountain having a bowl that prevents the lips touching the bubbler.—Saves time of employees by preventing the "hanging-around — waiting-for-cup" method of drinking.

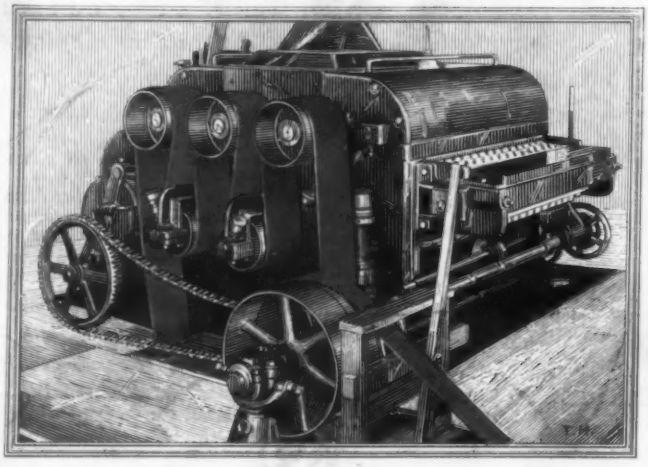
PURO Sanitary Water Cooler consists of an AIR-TIGHT cork-insert tank containing a 40-foot coil of galvanized pipe, and mounting the famous "Puro, Jr." drinking fountain. The water will not bubble over—the overflow waste pipe or drain takes care of surplus—the water is turned off the instant the bubbler handle is released, thus eliminating waste.—No sudden squirt of water but an even sufficient bubble of ice-cooled water.

PURO Fountains are easily and quickly installed.—An installation will pay you dividends. Why not secure prices today. Write for catalog.

Puro Sanitary Drinking Fountain Company
39 Main Street, Haydenville, Mass.
Southern Agent, E. S. Player, Masonic Bldg., Greenville, S. C.

PURO SANITARY WATER COOLER
Registered Trade-Mark PATENTED

This illustration shows a Graton & Knight veteran in a Spartan Double Belt, 46 feet long and 8 inches wide. It is running every day in the plant of the Leroi Furniture Company, St. Louis, Mo. It has seen 4 1-2 years of service. This belt-eating sanding machine wore out three 9-inch ordinary belts in eighteen months. Its cost has been 40c a week, with long service to come.



For all drives designed in our Engineering Department the belts are proportioned so that the stress due to the horse-power being transmitted, is never more than one-tenth of their ultimate strength. The rules employed are the result of extensive experience, and applied to your problems may show that you are using a belt too good or one not good enough for the work to be done.

The Right Belt in the Right Place

Here is punishment for *any* belt. And as usual SPARTAN is the belt that is game for it. It shows the right belting material in the right place. SPARTAN, greatest of pulley-grippers, flexible and elastic, is solving the problem of the trouble-making drive in thousands of plants. There is one answer and one reason—leather properly tanned and fabricated for a given purpose—a Standardized Series.

You can't think of any belting material that stands hard knocks the way leather does—or one that can be satisfactorily spliced or repaired. Leather has the tightest of frictional grip. It gives and takes as the need arises. It doesn't fray under the side slapping of shifters. After a long and useful life on main drives you can cut it into smaller belts and keep it earning money.

Graton & Knight Standardized Series Belts are made for the work to be done—from the first step in tanning. Very nearly 300,000 steer hides pass through our hands yearly. Think of the broad selection that gives us, the uniformity of quality possible. And installing any G. & K. Standardized Series Belt means the right belt in the right place—not merely a belt, but a belt for a *given* purpose.

Many of the best belted plants ask us to specify the belting for every drive. Try the plan yourself. Then, when buying, call for "Graton & Knight Brand—or equal." This won't commit you to buying our belts. It will put your buying on the one basic consideration—the work to be done.

Write for information about Standardization as applied to Belting

THE GRATON & KNIGHT MFG. COMPANY, Worcester, Mass., U. S. A.

Oak Leather Tanners, Makers of Leather Belting, Lace Leather, Leather Packings and Specialties

Branches and Distributors in all Principal Cities

GRATON AND KNIGHT

GRATON & KNIGHT

Standardized Series

LEATHER BELTING

Tanned by us for belting use

1854 G&K